

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper

Second-class postage paid at Boston, Mass., and additional mailing offices

year

March 28, 1973

Vol. VII, No. 13

CW SAMPLE COPY
M43106JUVIUM FCMB FC
UNIVERSITY MICROFILMS
SERIAL PUBLICATIONS
300 N ZEEB RD
ANN ARBOR MI 48106

NEWS IN BRIEF

Southern DP Centers Escape Recent Floods

CHATTANOOGA, Tenn. — DP centers remained high and dry recently throughout the worst floods to hit the Tennessee, Alabama and Mississippi areas in the last 50 years. However, the massive storm did manage to produce two close calls in Chattanooga and Huntsville, Ala., the cities hit hardest.

In Chattanooga, the Tennessee River crested just three feet below and 80 feet away from the computer room in Beyer Hall at the Chattanooga State Technical Institute. Pete Clark of the computer center said, "We weren't too worried because the predicted flood crest was two feet below us. However, we were standing by and could have moved all but a few pieces of equipment to the upper floors."

At Prestolite Division of Eltra Corp. in Huntsville, the river crested within four feet of the danger level. Carl Terry of the DP department said the floods hadn't affected operations.

"We didn't make any preparations in case the river crested higher than predicted," he added when asked if the firm had prepared for a situation similar to what occurred in Wilkes-Barre, Pa., early last summer.

Bombing Suspect Charged With Arson and Murder

MADISON, Wis. — A plea of innocent was entered on behalf of Karleton Lewis Armstrong, one of the men sought in the Aug. 1, 1970, bombing of Sterling Hall at the University of Wisconsin here in which a physics researcher was killed and several computers destroyed.

Armstrong, 26, remained silent in Dane County Court here to charges that included four counts of arson and first-degree murder. Judge William C. Sachtjen entered the plea for him.

On the Inside This Week

GAO Claims Costs
Of CCH Unknown

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Ansi Reopens Standards Unit
For OS Control Languages

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Domestic Satellite Scene Heating Up

E. Drake Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. — Two recent actions have moved the domestic use of satellites for data communications users closer to reality.

Last week Western Union Telegraph Co. (WU) proposed new rates for its planned domestic satellite system which could cut

For details of WU's Westar service see Page 19

current user rates by more than 50%. And American Satellite Corp. announced plans to have a system operating later this year for U.S. users.

Western Union, the only firm to have Federal Communications Commission approval at the present time for the con-

(Continued on Page 4)

New Restrictions Mixed-System Support Policy Redrawn by IBM

By Alan Taylor

Special to Computerworld

ARMONK, N.Y. — The maintenance arrangements involved when IBM and non-IBM equipment are mixed, and by which IBM continues to maintain its part of the equipment, were again changed by IBM in letters to users last week.

The new arrangements, explained in a reissue of the IBM Multiple Supplier System Bulletin, added:

- Charges for costs of maintenance calls resulting from additions and alterations.
- Inspection by IBM local and laboratory personnel of altered and restored equipment.
- Provision for increased charges for maintenance contracts

(Continued on Page 6)

Solons Upset At Operations Of Computers

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Lincoln, Neb. (AP) — Gov. J. James

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Carpenter Asks Bids Be Rejected

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Carpenter Calls in the Experts

Continued from Page 1

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Commissioner William Perry

and Welfare Director Wed., Feb. 27, 1973

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Nebraska Wins Fight for Open Bidding

By Michael Weinstein

Of the CW Staff

LINCOLN, Neb. — "I will not be frightened off by their (IBM) actions and conversations they have had with legislators and legislative staff," J. James Exon, governor of Nebraska (Feb. 20, 1973).

This stand, and the accusation that IBM was using pressure to "hold a stranglehold on the computer market in this and other states," followed alleged state senate and local IBM efforts to halt the process of public bidding for computer equipment after seven years of a no-bid arrangement with IBM — a contract presently estimated at over \$1 million a year.

The controversy began over a year ago when the governor said he wanted "to see if the same service and equipment could be obtained for less money."

Acting under the governor's orders the director of the Department of Administrative Services, Dr. Gus Lieske, began investigating other potential suppliers.

But before the evaluation could be completed, Lieske reported he was being pressured by local state senators — led by Sen. Terry Carpenter — together with

local IBM personnel.

Carpenter and the other senators charged the state with "embarking on a course of changing computers when they had no long-term growth plan."

However, the state had one of the best computer operations in the nation, according to Carpenter, and he could see no reason to change it.

One senator related how a "reliable source" had told him that IBM made the best equipment and other equipment was "second generation."

"I wouldn't disrupt a smooth-flowing operation for the saving of a few dollars," Carpenter told the senate.

Senators then began to bombard Lieske with copies of a *Wall Street Journal* article in which a private financial analyst stated he would not invest in one of the other computer manufacturers the state was considering.

Don't Switch?

Joining the senators, according to (Continued on Page 6)

New Lease Avoids IBM Penalties

By a CW Staff Writer

STAMFORD, Conn. — Users interested in IBM's latest 48-month leasing agreement now have an alternative from Computer Investors Group (CIG) which saves the user money and avoids the strict penalty clauses used by IBM.

Over a 48-month period, users opting for the CIG plan can save from \$153,168 for a 370/135 to \$926,208 for a 370/168 over the IBM plan.

While the IBM plan allows users to build

up purchase credits to approximately 50%, CIG users can build credits up to around 60%.

Subleasing Possible

IBM does not allow the user to sublease his system while the CIG plan allows users to sublease, assign or transfer.

IBM will not allow trade-in of installed 360 or 370 systems — the CIG plan will allow for trade-ins.

(Continued on Page 2)

GAO and Rap Sheets — Part II

Cost to Develop Operational System 'Not Determined'

By E. Drake Lundell Jr.

Of the CW Staff

WASHINGTON, D.C. — Will the benefits of a national Computerized Criminal History system be worth the huge costs to develop it?

Apparently no one knows, according to the General Accounting Office, because neither the FBI nor the Law Enforcement Assistance Administration (the two main proponents of the system) have bothered

to determine what a national system will cost the taxpayers, even though they are both pushing for its development.

Already, the congressional watchdog agency said, LEAA has awarded "grants totaling about \$4 million for developing a prototype of such a system and to enable 20 states to participate when it becomes operational."

GAO noted, however, "substantial additional funds 'will be needed to develop the national system, and said LEAA and state officials estimated a minimum cost of at least \$100 million."

"But," GAO stated, "the cost to develop a fully operational system has not been determined," even in the face of the LEAA and state "guesstimates" about the total costs.

"Therefore, federal, state and local governments cannot determine whether they will be able or willing to meet the financial requirements of developing and operating the system," GAO charged.

GAO urged the Justice Department to "determine the total cost of developing and operating the criminal history exchange system" before "authorizing substantial additional expenditures" for the system.

"Without an accurate forecast of all system costs... the Federal Government is entering an open-end commitment; it has no assurance that the participants will be able to meet the financial requirements of the system," GAO said.

To participate in the system, it noted that each state will need necessary hardware, software, personnel and intrastate

communication lines, "as well as the ability to convert arrest and disposition data to the standardized NCIC format and to identify fingerprints... The states, assisted by LEAA, will pay these costs."

The agency also stressed that local police and other criminal justice agencies will have to purchase terminals for use

"We believe... that sound financial management of a project of this magnitude requires at least an estimate of the costs of the project."

with the system to be able to query it. Approximately 38,500 terminals more than the ones presently hooked into the National Crime Information Center will be needed, GAO reported, all to be paid for by the local jurisdictions.

At present, GAO reported, the FBI and

the LEAA are to some extent squabbling over who should develop the cost information for the system, with both saying the other should be responsible.

Even though GAO noted that users of the system were "not sure that we are in a position to justify the cost involved to implement a criminal history exchange system," it added that LEAA had said that a cost-benefit analysis would be "inappropriate because of the many intangible benefits to be derived from the system."

GAO indicated, however, that "we believe... that sound financial management of a project of this magnitude requires at least an estimate of the costs of the project."

"Otherwise neither the sponsoring federal agencies nor the Congress can determine whether they will be able or willing to meet the financial requirements of the system."



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EDITORIAL OFFICES: 797 Washington St., Newton, Mass. 02160. Phone: (617) 332-5606. TWX: 710-335-6635. Europe: Computerworld, c/o IDC Europa Ltd., 59 Grays Inn Rd., London, W.C.1, England (01-242-8908).

Second-class postage paid at Boston, Mass., and additional mailing offices. Published weekly (except: a single combined issue for the last week in December and the first week in January) by Computerworld, Inc., 797 Washington St., Newton, Mass. 02160. © 1973 by Computerworld, Inc.

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25 cents a copy; \$9 a year in the U.S.; \$10 a year in Canada; all other foreign, \$25 a year. MARGARET PHELAN, circulation manager. Four weeks' notice required for change of address. Address all subscription correspondence to circulation manager, Computerworld, 797 Washington St., Newton, Mass. 02160.

COMPUTERWORLD, INC.

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DPer-Lay Pastor Brings Gospel Of Automation to Help Churches

By a CW Correspondent

LOS ANGELES — A former IBM executive and lay pastor is now bringing the gospel of the computer to churches.

Jim McKeever, 42, president of Triversal Industries International, offers software systems tailored to help churches and Christian organizations with their book-keeping, management and fund-raising.

Triversal expects to have a volume during its current fiscal year of \$1.5 million and 50% to 75% will come from churches and religious organizations.

There are three divisions: computer services, business services and management services.

The software systems include a receiving and management system for charitable organizations which does mailing list maintenance, contribution income accounting, receipting for donations and management reports on fund-raising.

Another system offers financial and budget services for charitable organizations.

"We probably have \$1.5 million in software which we can put to work for small organizations or churches."

In addition to religious clients, Triversal also has software for physicians, retail stores and convalescent hospitals.

It has an IBM 370/135 at a computer center in San Bernardino and an IBM 360/20 in Wheaton, Ill.

McKeever worked for IBM for 10 years and was programming systems requirements in Poughkeepsie, N.Y.

McKeever, who still teaches Bible studies in Los Angeles, said the reaction of clergy to the computer depends on their age. "Many churches have young progressive people," he said.

Churchmen telephoning Triversal are given a gentle introduction to the computer age when they are put on hold and a tape plays a hymn-like tune.

CIG Plan Avoids IBM Penalties

(Continued from Page 1)

IBM does not allow for a mainframe change within the term of the lease. This means a user cannot sign up for a 145 for the first two years to be replaced by a 158 for the remaining two years. But users can include a mainframe change clause in the CIG agreement with no incurred penalties.

The IBM agreement includes penalties for field-installing mainframe upgrades.

IBM 48-month subscribers either lose price protection, extend the entire system lease commitment for 48 months from the time of the feature upgrade, or they lose price protection and pay a 115% standard rental for the feature or upgrade.

Price-Protected

The CIG plan allows users to add field-installable features while retaining price protection and paying normal rental for the term of the lease remaining.

Users of the IBM 48-month plan pay stiff penalties for a field model downgrade — e.g., going from a 370/145 to a 370/135. These penalties include the forfeiture of price protection and payment of 12-1/2% of the net rental difference times 48 months or 25% of the net rental difference times the number of months remaining in the term.

IBM lessees pay the same penalties for feature removal and non-field installable upgrades.

In these cases, CIG said, it will retain price protection with the rental reinvoiced to reflect the number of months involved.

In the case of non-field installable features, users can include in the contract options with no incurred penalties.

Finally, an IBM user who lets his 48-month lease expire cannot renew while the CIG user has unlimited renewal options.

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DP Hiring Opens Up, but Managers Want Experience

By Toni Wiseman
Of the CW Staff

BOSTON — The employment situation in the data processing field is a little rosier these days. In the past six months, employment rates have moved upward and observers feel the trend will continue for some time.

An improvement in the business economy and a move toward automation by small- and medium-sized companies are credited with reversing the DP employment slump of the last few years.

In a random survey by *Computerworld*,

data processing managers across the country agreed the marketplace is opening up. "We've lost a few good people recently," M. Shanahan of Metropolitan Life Insurance Co., San Francisco, noted, "and it's the first time in several years this has happened."

Better Paying Jobs Available

Shanahan speculated this loss of personnel was due to the availability of better paying jobs, an unusual situation in the past few years, he added.

F.R. Sullivan of the Gillette Co. in

Boston felt that "in recent years the big companies were held down, but now they have a more liberal budget and are hiring again.

"The problem at present," he said, "is with the available labor pool. There are a lot of people out there, but they don't have hands-on experience. The quality of personnel available isn't what it should be."

John Bennfield of the First National Bank and Trust Co., Tulsa, Okla., agreed. "It's difficult to find qualified people now, despite reports of unemployment." Bennfield felt that experience was what counted, not a college degree.

Senior-Level Hiring

"The small companies, and many of the larger ones, don't have the facilities to train personnel," Robert Hackert of Stationers Corp., Los Angeles, added, "so they have to hire people who are capable of coming in on a senior level."

Even though A.T. Hayes of Casco Bank

and Trust, Portland, Maine, preferred to train his own senior people and bring in new personnel in junior positions, he agreed the job market is "pretty good right now — particularly if the person has some real experience to offer."

Though lack of experience was the most often cited obstacle to employment, "overspecialization" was also mentioned.

"It's the big guys, the ones with B.S. or M.S. degrees who will have problems," predicted George Marra of Fishkill National Bank, Beacon, N.Y. "The openings are in the smaller businesses and they can't afford the salaries big degrees command, nor do they generally need that kind of expertise in their shops."

The majority of the new wave of hiring apparently is being done by medium-sized companies. Many of the DP managers contacted said they were looking for personnel with two to five years' experience, mainly in systems analysis. DP personnel with manufacturing or banking experience are also in demand. Openings in the scientific field are less numerous.

Education Commissioner a DPer?

WASHINGTON, D.C. — Computer-assisted instruction may get a boost under President Nixon's new nominee for commissioner of education, Dr. John R. Ottina, since his background consists largely of DP experience.

Before he joined the Department of Health, Education and Welfare, Ottina was chairman of the board and president of Worldwide Information Systems, a subsidiary of King Resources Co. Concurrently with that position, he served as executive vice-president of the Computer Systems Division of the parent company.

Before going to Worldwide, Ottina was a vice-president of Systems Development

Corp., where he served for almost 10 years.

While with the government, Ottina served as deputy commissioner for education for development in HEW until last year when he was made deputy commissioner of education for planning, evaluation and management.

Focal Mechanism Program Focuses on Earthquakes

BOULDER, Colo. — Two geophysicists with the Earth Sciences Laboratories of the National Oceanic and Atmospheric Administration here are involved in computer studies of last December's disastrous earthquake in Managua, Nicaragua, calculating its precise direction of motion.

Hopefully, results will aid in predicting earthquake-caused tidal waves and the extent of damage of the earthquakes themselves.

William H. Dillinger and Sam T. Harding plan to add the results of their focal-mechanism program to the computer routine now used operationally to find and describe global earthquakes.

"Once the program enters operation use, it will give us an early view of the strike and dip of the faults that cause an earthquake and tell us something about the energy content of the earthquake," Harding said.

The 1973 Computer Caravan is coming

ANAHEIM

March 27-29 — Disneyland Hotel

SAN FRANCISCO

April 3-5 — Civic Auditorium

KANSAS CITY, Mo.

April 11-13 — Municipal Auditorium

CHICAGO

April 17-19 — Conrad Hilton Hotel

CLEVELAND

April 24-26 — Convention Center

Forum Workshops*

Day 1:

9:00 a.m. Data Entry

2:30 p.m. Data Communication Planning

Day 2:

9:00 a.m. Data Communications

2:30 p.m. Software Evaluation Panel

Day 3:

9:00 a.m. Installation Management

2:30 p.m. Small Systems Panel

*Entry to the morning sessions is \$25 per day, which includes all workshop materials, luncheon, and admission to the Exposition Hall (see pre-registration form on page 28). Afternoon sessions are open to all — free of charge.

Exposition Hall

10 a.m. to 6 p.m. daily. Tickets are \$5 per person and should be purchased at the door.

Ampex gives you more than you asked for... again

Ampex' newest space saver...the 3420-compatible two-in-one tape subsystem for 360 and 370 computers

The biggest news since Ampex pioneered tape recording is the new two-in-one configuration for the Ampex TC-38/TM-34 tape subsystem. Now you can reduce the amount of space for tape drives and controllers in your DP center by nearly 50% ... or double the number of drives without allocating more space. You can get two high performance 3420-compatible tape drives with data rates to 200 KB, in a single cabinet only a little larger than one individually mounted tape drive. It's such a logical idea, it's amazing no one thought of it before.

But space reduction is only the beginning. The auto-thread on the TM-34 now is equipped with an exclusive "halo of air" that vastly improves threading without the reel-surround cartridge. The tape will literally thread itself from any position. Furthermore, the TM-34 has an automatic reel latch that forever eliminates manually operated locking levers or buttons. And, of course, this drive has a radial interface for operation with either the Ampex TC-38 or the IBM 3803 controller.

Format configurations include any combination of 9-track, single or dual density, and 7-track with data rates from 60 to 200 KB.

If you want extra value with every peripheral product, call your Ampex Computer Specialist today. He can solve your space and budget problems with disk drives and memory enhancements, too.

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Approach With 'Caution'

Numerics an OCR Problem

By Ronald A. Frank
Of the CW Staff

HOUSTON — Handprinted numeric input to OCR systems must be approached with "caution and control" by the user. This type of application should be implemented only in cases where high volume source documents with limited formats are used, according to Don Larson, marketing manager at OCR Services, Inc.

Speaking at a Computer Caravan/73 session on data entry techniques, Larson told users that adequate preparation and "quality programming" of OCR devices are essential to operating an effective scanning installation.

One of the major problems with handprinted numerics is the readability of documents, users agreed. One attendee urged careful attention to education for those who will handprint numbers onto the OCR forms.

"When you want users to write legibly

for the machine, you have to provide a quality platform, according to George Jordan, an OCR user. A significant improvement in handprinted input can be achieved by providing a comfortable "platform" for those entering data, Jordan said.

Caravan/73: Houston

Individual numbers should occupy 75% of the inner box to be scanned, and they should be printed in clear, legible formats, the attendees agreed. Among the "problem numbers" are "5s" and "8s" while the number "4" was described as easy to recognize by OCR equipment.

One attendee who had implemented an OCR operation said it takes about three days to properly train those who have to

Data Entry Needs Vary With Each Site

HOUSTON — The need to replace or upgrade a keypunch or other data entry installation varies with each site.

At the Texas Commerce Bank, a keypunch operation was eliminated in favor of an Inforex data entry system with significant results, according to Phil Rossiter, manager of corporate stock transfer. The switch improved throughput by 25%, the user estimated.

The bank's stock transfer system needed modernization because the latest transactions were not being keypunched fast enough. This was not primarily a consideration of hours or dollars, but execution of transactions was being delayed because immediate

data was unavailable, he said.

"There is no magic formula for updating an entry system," according to Don Larson, marketing manager at OCR Services, Inc. Most vendors recommend that a user with eight to 10 keypunches think about a faster entry system, but this is not a definite requirement. Instead, an upgrade should be considered whenever there are problems, Larson said.

One way to allow for continually increasing needs is through the use of intelligent terminals, said Jack Thompson, systems manager at Texas A&M University. These devices may "stretch your imagination," but they allow the user to operate with both off-line and on-line applications, he said.

handprint numbers. And proper formation of the numbers can be aided by "controlling" the area where the forms are written.

One suggestion for improvement that can be made easily by users was that the writing area be above the operator's waist, and the surface be slightly tilted toward the individual.

Although rejection rates for handprinted forms can be as high as 10% with new operators, simple education on entering the numbers can drop this rate to only .75% on "established users," one attendee said.

Most OCR installations scan alphanumeric, Larson said. Mark-sense scanning has limited use in educational areas such as exam scoring or surveys, and handprinted numerics should be used only when there is no feasible alternative, the attendees said.

Larson said his installation selected a Control Data medium-scale page reader with programmable CPU because it offered the most flexibility. OCR is a "more complex" medium but with careful software and standardization wherever possible, it can be made cost-effective, he said.

Attendance Reaches 14,800

HOUSTON — Total attendance for five cities visited by Computer Caravan/73 reached 14,800, with about 2,300 persons attending the Caravan here. The three-day conference/exhibit will be in Anaheim March 27-29.

In-House Programming Can Be Rewarding 'Chore'

HOUSTON — Sooner or later users must choose between vendor-supplied software packages and in-house-developed programs.

In-house programming can be a "tremendous chore," according to Jack Thompson, computer systems manager at Texas A&M University, but it is the only way the user can realize the full capabilities of his equipment.

Bank's System

Among the in-house systems developed by panelists attending a Caravan session was a teleprocessing monitor described by Sam Beard, supervisor of systems development at the Bank of the Southwest. The monitor handles BankAmericard

transactions, a stock transfer system and similar financial applications.

The teleprocessing system can operate on either of two 370/145 CPUs at the bank, Beard said. And in case of CPU failure, the monitor can be switched to the second mainframe.

Whenever the on-line system goes down, everyone in the bank "gets very excited," Beard said. But despite some remaining "quirks in the system," current downtime is not enough to "establish an average," he said.

The on-line banking system replaced a card-oriented data entry system at the bank. Commenting on the importance of the new system, Beard said: "The data is gone, I don't have the card to fall back on

anymore. The data is entered into the system and it has to be reliable."

Uncomplicated?

Built into the monitor is the ability of users to do development work in Cobol without knowing complicated communications considerations, Beard said.

Using the teleprocessing software, the bank can process a BankAmericard transaction in "three to four seconds" on a 4,800 bit/sec line.

In portions of the system, the bank has installed its own wire, thereby eliminating line rentals to the local phone company. In addition, shorter links in the system are operating at the relatively high data speed without modems.

WU Sets Rates, American May Piggyback Telesat

(Continued from Page 1)

struction of a domestic, commercial satellite system, plans to launch its system in April 1974.

Under the proposed rates, a user would be able to rent one coast-to-coast private voice-grade circuit for around \$1,000/mo, compared to the present charge for a private-line circuit from Bell, which is \$3,000/mo. The firm said it planned to offer discounts to users who would rent circuits in bulk with the discounts start-

ing for the user renting 60 or more circuits.

The Westar service will be much like the Telesat system now in service over Canada in that the satellite will have 12 transponders.

WU said its rate structure was not yet finalized, but noted it would have to be submitted to the FCC for approval before it could be official.

If American Satellite Corp.'s proposal to

piggyback on the Canadian Telesat system is approved by the FCC, U.S. users will be able to take advantage of the communications satellite this fall. And U.S. users will have their own satellite system in operation approximately one year later if the firm's plans are cleared by the FCC.

The firm announced it had received commission clearance to issue contracts for some of the equipment in the proposed system. The commission vote does not necessarily mean the FCC will eventually approve the entire system, but it at least allows the firm to begin work now, American said.

12 Transponders

Under phase one of the American Satellite plan, the firm has already contracted with the Canadian Telephone System to use two or three of the 12 transponders on the Telesat system for U.S. customers.

During this part of the operation, the firm will build ground stations in New York, Dallas, Chicago and Los Angeles to serve the U.S. users.

While the final rate structure for this service is still to be determined by the commission, the firm added that the rates would be very competitive with the present Bell private line and Telpack rates.

American said data rates of 240K bits would not be the maximum that it could provide, but noted those were the highest any users had discussed with it to date for direct computer-to-computer communications.

Phase Two Contract

The firm also announced it had awarded a contract to Hughes Aircraft Co. for three satellites to be used in phase two of the project when American Satellite launches its own system in late 1974.

Presently the firm has already received a commitment from the National Aeronautics and Space Administration to launch the first of the domestic satellites in the third quarter of 1974, and has made a down payment of approximately \$600,000 for the first launch by Nasa, it said.

During phase two the firm will also construct four additional ground stations near Washington, D.C., Atlanta or Miami, Seattle and San Francisco or Boston depending on the pattern of traffic.

Phase Three

The firm also announced plans for phase three of its proposed system by awarding a contract to Fairchild Space and Electronics Co. for the development of a 24-transponder satellite that would probably be launched in four or five years — doubling the capacity of the satellites to be used in phase two of the project.

The project is a joint venture of Western Union International and Fairchild Corp.

Pilot Program to Test DP As Collective Bargaining Aid

NEW YORK — The ability of the computer to be an effective helper in collective bargaining will be tested soon in a pilot program recently begun by the American Arbitration Association, Adelphi University and the Adelphi Chapter of the American Association of University Professors.

The three groups will feed data on collective bargaining issues into a central negotiating bank. "We hope to test whether agreement on information can help promote the resolution of conflicts in collective bargaining," said Donald B. Straus, president of the Research Institute of the Arbitration Association.

DP Firm Official Slain

By E. Drake Lundell Jr.
Of the CW Staff

FALLS CHURCH, Va. — Sam Shaulis was shot and killed here last week while trying to protect two women employees of General Computer Systems from a would-be robber.

Shaulis, 41, was shot four times by the gunman and died on the way to the hospital.

Shaulis was working over the weekend (March 17) with a part-time secretary and a systems analyst to get some proposals ready for a Monday morning presentation as part of his job as Washington, D.C., sales manager for General.

The part-time typist was working in the office of the building owner, which was next to the General Computer Systems office here, when the gunman entered and ordered her to open the other offices in the building.

She said she could not do that since she was a part-time employee. The robber then tied her up while "waiting for your boss."

Shaulis, noting the silence in the

adjoining office, went to check. The gunman demanded he open the other offices, mistaking Shaulis for the building owner.

The systems analyst went into the adjoining office to check on Shaulis.

The gunman shot at her but Shaulis wrestled him to the floor before being shot in the stomach.

The gunman then started after the fleeing analyst, but Shaulis managed to chase him down the hall, where he was shot three more times before the killer fled.

Shaulis joined General Computer Systems just last month after a sales career with Honeywell's data entry operations in the Washington area.

He is survived by his wife and four children.

Police said there were no suspects as yet.

Local police have asked that the names of the analyst and part-time secretary not be released for fear that the still unknown gunman would try to kill the remaining two witnesses to the crime.

Built Mark I**H. Aiken, Computer Designer, Dies**

ST. LOUIS — Dr. Howard H. Aiken, responsible for the first large-scale computer (the Mark I) died at the age of 73.

Aiken, emeritus professor of applied mathematics at Harvard University, worked in conjunction with engineers at IBM to build Mark I in 1944.

During World War II the computer was used to solve technical and secret wartime problems.

Possibly because of the early uses of his

designs, Aiken became concerned with the computer's role in society.

At a testimonial dinner given for him in 1961 he voiced concern for applications chosen for computers and stressed a hope that data processing would be used for the benefit of mankind and not to its detriment.

Time and again he stressed that the computer was not an "easy answer machine" and its ability did not preclude the need for computer users to think.

"The only advantage of computers is greatly increased speed. But they can only act on information fed into them," he said in one effort to demystify computers and their usage.

Born in Hoboken, N.J., on March 8, 1900, he graduated from the University of Wisconsin in 1923 as an electrical engineer.

After spending 10 years as a professional engineer he returned to Harvard, received a Ph.D. in 1939, and remained as a professor until 1961.

Italian Courts Access Laws in Real Time

ROME — The Italian Supreme Court of Cassation has inaugurated a real-time information retrieval system to make legal "case books" available to courts throughout Italy.

By the end of the year about 100 visual display terminals will be installed and linked to a computer center here. The system will provide instantaneous information on the precedents of the court of Cassation (similar in function to the U.S. Supreme Court), the dates of judgments of the Constitutional Court and the contents of most important law tomes.

One problem in setting up the system was defining the data and creating a computer-based index for Italian case-law. The designers discarded the conventional "key word" approach and adopted a "concepts" system of document classification.

In operation, a complete text of each of 60,000 maxims is contained in the computer file. Using predetermined criteria, the computer breaks down the maxim texts, removing all insignificant words. Each remaining word is compared against a special thesaurus held in storage.

The thesaurus, composed of about 40,000 words, was reduced to language "seeds" compiled in a special index.

To retrieve information, the inquirer enters a random combination of language seeds. The computer then selects the maxims containing all the words entered by the inquirer.

The system is based on a Univac 1106 CPU linked to Olivetti display terminals equipped with printers. These are located in various offices of the Supreme Court in Rome and in Courts of Appeals in Milan, Turin, Florence, Bologna, Naples and Palermo.

CodasyI Committee May Incorporate

Special to Computerworld

PITTSBURGH — The CodasyI Planning Committee, one of the five standing committees of CodasyI, is moving to incorporate itself as a separate body.

The draft incorporation papers produced by Chairman Warren Simmons have as a primary aim the protection of the position of committee members who are not able to physically attend meetings. This is particularly necessary for the planning committee because many of its members are societies with small travel funds, and some are situated overseas. Planning committee meetings in the past have taken place only irregularly and with small attendance.

At the February committee meeting Simmons produced what he called a "straw man" constitution developed mainly from the constitution of a user group. The plan would have resulted in the direct appointment of task force

officers, with little actual power being held by the members of the committee themselves.

During the discussions several changes were agreed to which protected the power of committee members to obtain information, and have some influence on appointments. Disagreement still remained on admitting the public to meetings. In the straw man constitution the public was excluded from planning committee meetings.

In the current Cobol constitution one of the purposes of the conference is to perform all its work in public. But the majority of those present voted against admitting the public.

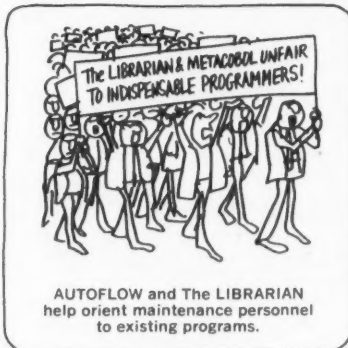
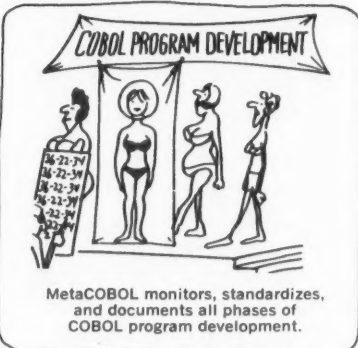
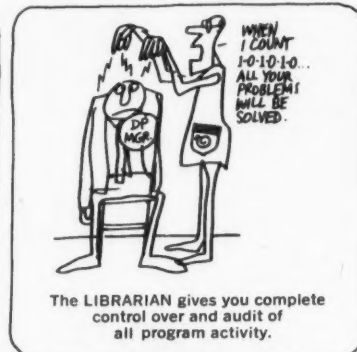
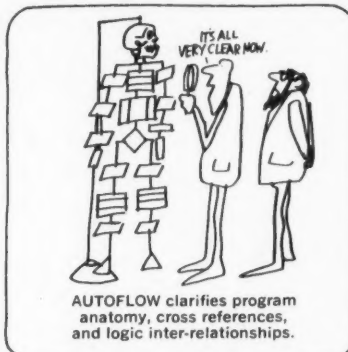
The February meeting was attended by representatives of the Burroughs Users' Group, the Association for Data Service Bureau Operators, Adapso and the Society of Certified Data Processors, as well as the committee officers. Membership is open to any organization interested.

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*EDP Analyzer, October 1972, That Maintenance "Iceberg," P.1. (Send for complimentary copy.)



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IBM Letter Tells of Revisions in Maintenance Policy

(Continued from Page 1)

"to cover costs" where the costs of maintaining have been significantly increased by the addition of alterations.

The bulletin also places new restrictions upon the additions and alterations which can be connected, over and above the older restrictions laid down in the 1956 Consent Decree.

Alterations must now conform to specific IBM rules (all parts and wiring shall be made clearly distinguishable, full descriptions of all alterations and their maintenance documentation must be made available, microcode alterations and displacements must be identified, etc.). However, despite the requirement that users provide maintenance documentation applicable to the maintenance of the altered equipment, the IBM bulletin said that the maintenance will be performed using the maintenance documentation for the unaltered equipment.

IBM disclaims any blame for future damage from following these procedures.

Another new area involves changes in warranties affecting unaltered equipment.

Previously IBM has accepted that maintenance responsibilities for machines which have not been altered in any way did not change the warranty involved.

Under the new agreement, unaltered machines — and ones not directly connected to non-IBM equipment — can have their warranty affected if "an alteration or attachment impacts any maintenance dependency of one IBM machine upon any other IBM machine." The case apparently dealt with here involves the use of altered IBM processors in the maintenance procedures for other independent units, such as tape drives, communication terminals, etc.

While the new bulletin contains many much more explicit provisions than older versions of the bulletin, it still contains a number of undefined terms which make it impossible for a user to explicitly determine in advance how they are going to be applied, or whether their application is in conformity with the contractual obligations assumed by IBM.

One particular omission concerns the mention of what is to happen when maintenance is "practical," but where it still may involve some practical modification

of IBM's maintenance methods for the unaltered machines.

In the maintenance procedures spelled out, the IBM field engineer will only give the user the option of removing the alteration, or having the service organization responsible for operation of the alteration or attachment ensure that such parts are operating properly.

If they are so operating, and yet the IBM procedure is no longer strictly followable, the process appears to lead to an undefined situation.

IBM Data Unavailable

Another problem facing the user is in determining the IBM diagnostics, maintenance procedures and other maintenance documentation to be used.

While these are supplied to the IBM maintenance forces, they may not be supplied to the user, although he is responsible for checking that his attachments are effectively transparent to the IBM procedures. Moreover, no provision is made in the bulletin for providing customers with notices of changes in maintenance procedures, even though these may be changed by IBM.

User charges under the bulletin also appear to need further clarification. The IBM charge philosophy is stated to be to recover "additional costs," but no provision of allowing users to determine what the actual cost of IBM maintenance currently is, or by how much it may have increased, is provided.

In the past IBM has stated that such maintenance costs are considered as being proprietary information, and it appears unlikely that its position will be reversed at this time.

A more likely IBM position appears to be that users will be expected to pay whatever IBM selects as the additional costs, without being permitted to verify that the charges are correct.

IBM's maintenance philosophy is further stated in the bulletin to be the recovery of only those additional costs incurred by IBM as a result of the attachments or alterations, and is further restricted to cover only such service charges so identified at the time of the actual service call. This provides users with some protection both for frequency of additional charges, and for the amount of any specific charge.

Data Logger Checks Furnace

MELBOURNE, Australia — Victorian State Electricity Commission has installed a data logger to monitor the operation of an experimental furnace at the commission's Central Scientific Laboratory.

The data obtained is recorded on paper tape and processed and checked by computer to provide values for a number of parameters which describe the performance of both the radiative and convective heat transfer surfaces in the furnace.

The experimental furnace is used to evaluate the combustion and fouling characteristics of brown coals. These tests could aid in the selection of future open cut sites for optimum furnace performance.

Nebraska Wins Fight for Public DP Bidding

(Continued from Page 1)

Lieske, were IBM's local sales personnel who began to state openly that the problems of switching to another vendor could endanger the state's entire operation. Lieske reacted by adding a guaranteed conversion clause to his request for proposal.

As an enticement to stay with IBM, Lieske said, the local IBM staff then outlined features of "virtual memory."

The IBM contention was that two 370/145s using "virtual memory" could

outproduce the present configuration of a 370/145 and 370/155 at less cost. "Further, IBM said they could have this "virtual memory" operation up and going over a weekend.

"My response was to say fine, and I gave IBM a weekend in December 1972 on which I would like to see their system up and running," Lieske recalled.

Despite the pledge of weekend service, Lieske noted that three months later IBM still did not have the "virtual memory" configuration up. The state did, however, change its specifications — once.

IBM's explanation, Lieske claimed, was that while IBM could have the system up over a weekend it required a great deal of preplanning.

Further, IBM indicated it had found it difficult to find an additional 370/145 for the configuration, Lieske said.

Lieske said that soon after, he began to notice similarities in the complaints of the local IBM representatives and the arguments of the state senators.

While there was nothing on paper or documented, the similarity of IBM questions and state denunciations became "predictable," he said.

About this time, Carpenter and the senate reversed their stand. Now they charged that the state's operation was weak and required independent study.

Carpenter — on his own — arranged for the study which would cost the state \$100,000 "to determine the real problems within the state's DP operation."

This proposed study, coupled with Lieske's allusions to possible IBM-senate collusion, brought the local press into the conflict with a series of articles and cartoons deriding the senate position.

Governor's Statement

Trying to restore some order to the situation, the governor issued a public statement that (1) it was not the state's position to "turn IBM out" and that IBM had an equal chance to be the successful bidder, but (2) it was the administration's goal to reduce costs, and if another vendor could be found which supplied equal or better service at lower costs, so be it.

When this statement did not seem to ease the situation, the governor called a press conference to state he would "not be frightened off..."

This position brought quick response from IBM, which dispatched Ralph A. Pfeiffer Jr. — president, data processing division, and IBM vice-president — and Jack E. Guth — midwest regional manager and DPD vice-president — to Nebraska.

Their goal, Lieske believed, was to show the state, through two meetings — first with the governor and then with Lieske — that IBM had been completely ethical and any feeling by the state as to pressures was "merely a misunderstanding."

Pfeiffer contended that IBM had investigated the situation and found no wrongdoing by IBM or any of the firm's personnel, according to Lieske.

Lieske was not so sure, but a main problem appeared to be centered in interpretations and misinterpretations on exactly what "unhooking" and "preannouncements" are.

Preannouncement or Unhooking?

According to IBM, its "preannouncement" policy, one of the rules all salesmen are supposed to follow, is "not to divulge or speculate on unannounced equipment, programs, education, services or plans prior to official announcement."

"Unhooking," according to IBM, "is that from the date IBM learns of the commitment [to another vendor] until the date the products are installed or services have commenced IBM representatives will refrain from efforts to sell substitute products or services."

Lieske claimed once in the past a local school had chosen another vendor over IBM.

In this earlier case, according to Lieske, and in the present controversy the state senate had been drawn into the situation. He pointed out that time and again questions asked by the senators supported current IBM arguments even though the senators had no background in data processing.

Pfeiffer, according to Lieske, did state there was no public evidence to support such a charge.

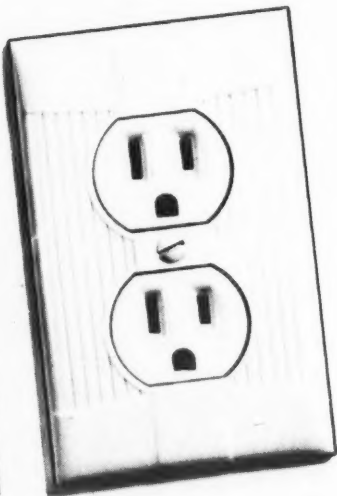
Lieske also claimed a local IBM representative had told him enough about "virtual memory" so that the ensuing release was no surprise, but again Lieske had no proof.

Will Fly to Nebraska

Pfeiffer and Guth, according to Lieske, indicated they were on a customer-relation call and that if Lieske ever did have any problems, he should call Pfeiffer directly and he would fly to Nebraska to help.

At present, following local press coverage, the governor's strong statement and IBM's visit, the opposition to public bidding has backed off. The proposed study is now a thing of the past.

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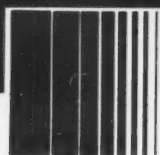
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System Protection Depends on Well-Educated Auditor

By a CW Staff Writer

TORONTO — Internal auditors are "clearly responsible" for helping companies "implement adequate security" for computer systems to protect against fraud and other threats, but they need to be educated about computers to do so, according to Dr. Harvey S. Gellman, president of DCF Systems, Ltd.

Speaking here at a seminar of the Toronto chapter of the Insti-

Auditors and DP Security

tute of Internal Auditors recently, Gellman said the internal auditor "must be concerned not only with protecting his company from computer fraud, but also protecting it from loss of availability of its computer systems" from such forces as fires, natural disasters and social protests.

And, of course, "the internal auditor will not be able to make an adequate contribution to the development of data security controls unless he has considerable knowledge about computer system design and computer programming," Gellman said.

"It is therefore necessary to

provide good education for the internal auditor to equip him for his role in protecting the security of computer systems."

Fraud Protection

In the fraud area, protection consists of two "essential measures."

"One," Gellman told the auditors, "is the separation of duties. For example, programmers should not operate the computer and the input control group should not prepare input."

The second measure, he said, is the separation of controls. "There should be a separate audit group, not under data proc-

essing."

In some cases, he noted, "the personnel of the data processing department may resist the involvement of auditors in their work. They may feel that the presence of auditors implies inadequate quality in the work of the data processing personnel."

But, he said, the cooperation of the auditors and DP personnel usually improves with time, and he noted "good collaboration is essential if proper controls are to be achieved in computer systems."

The internal auditor can best meet his responsibilities if he can review computer programs in the

design stage, Gellman stressed. But if he is unable to become involved at this point, the auditor should review the programs after they have been written "to determine the adequacy of built-in controls and to search for possible loopholes."

The third and, Gellman said, the worst choice "is for the internal auditor to audit the computer systems after they become operational."

Too Little Too Late

"After the computer systems become operational," he noted, "it is extremely difficult for the auditor to become familiar with all the intricacies of the computer programs and the operating procedures. Documents that describe the system are rarely adequate for helping the auditor acquire a full understanding of what is going on" in the system.

While most auditors now generally audit "around the computer" using traditional auditing procedures, Gellman recommended they begin "auditing through the computer" by using such techniques as simulated transaction testing, generalized audit programs and specialized audit programs.

Cost Analyses

In addition, Gellman maintained auditors should help companies in performing cost versus benefit analyses to determine appropriate security for different sets of data and programs in a system, because it is not cost-effective to spend \$10,000 to protect something worth only \$5,000.

"In terms of an overall strategy for data security," Gellman said, "I believe the internal auditor should try to identify the hazards that could affect his computer systems most seriously. He should then select and implement a few key security measures (usually involving about 20% of the total effort) that will produce about 80% of the desired results."

Tax Collector Taxed

LIBERTY, Pa. — The tax collector here took one bite of computerization and decided he didn't like the taste.

Phil Bugen, Liberty Township tax collector, notified the county tax board that he doesn't want the township's tax bills prepared by computer this year. The township reportedly had problems converting its tax records to the computerized system and in putting a recent revaluation on the tax rolls.

A large number of duplicate assessments and errors on the 1972 rolls required adjusted tax bills and a sizable municipal tax increase this year to make up for uncollected taxes.

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Thursday, May 10

THE WESTINGHOUSE STORY. Westinghouse Electric Corporation has always been one of the leaders in developing cost-effective information systems. After many years of experience, the Company has developed a number of policies that better insure success in implementing successful management information systems. These presentations will include discussions of such issues as:

- What are the organizational conditions that promote success?
- How can the systems group obtain management support?
- How do you develop professional and managerial skills within the systems group?
- How do you effectively introduce change into an organization?
- What are the costs and benefits of an integrated plant manufacturing system?
- How can the information system improve financial control?
- How can long-range systems planning best be achieved?

The Westinghouse team will consist of:

R.C. Cheek, President, Westinghouse Tele-Computer Systems Corporation.
T.A. LaRoe, Plant General Manager, Westinghouse Large Turbine Division.
J.B. Ferguson, Vice President and Controller, Westinghouse Electric Corporation.
R. L. Custard, Vice President, Divisional Management Systems, Westinghouse Tele-Computer Systems Corporation.

THE INTERNATIONAL UTILITIES STORY. IU (slated to become IU International on April 24) has developed, and is currently operating, one of the most sophisticated strategic planning systems yet implemented. The system provides valuable decision aids to assist IU management in planning and controlling a diversified company with \$1.2 billion in revenue. The system consists of an econometric subsystem, an optimizing subsystem, a simulation subsystem, and an information management subsystem that ties it all together. Among the important issues discussed are:

- How can econometric data support strategic planning?
- How can corporate assets be optimized among alternative uses of funds?
- How can you choose the most effective tradeoff between risk and rate of return?
- What information does management need for strategic planning?
- How can efficient graphical display contribute to more effective man-machine planning?
- What are the implications of advanced information technology in managing an organization?
- What skills are required to develop a sophisticated planning system?

The IU team will consist of:

Charles J. Curto, Manager, Development Planning.
Howard C. Jensen, Manager, Strategic Planning.
Thomas H. Johnson, Manager, Systems Development.

Friday, May 11

The second day will be devoted to separate Workshops that permit a more detailed examination of each company's system and management philosophy.

The fee for the two-day Conference is \$175. The first day may be attended separately, at a fee of \$100. The fee includes all handouts, lunch on both days, and a banquet on May 10. Non-members will be charged an additional \$30; this entitles them to membership in SMIS for one year.

PRE-CONFERENCE WORKSHOPS. Two Workshops will be given on Wednesday, May 9. The fee for a Workshop is \$75 including all handouts and lunch. The topics offered will be:

- #24 Financial Management Information Systems, Willis I. Else, Vice President, First National City Bank, New York City.
- #25 Ingredients of Successful MIS Project Management, Dr. Richard F. Powers, Commander, U.S. Navy, Office of Assistant Secretary of Defense (Systems Analysis).

Name: _____ Member of SMIS: _____ Yes _____ No

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Register me for May 10 and 11 (\$175) — ALSO check below which session you plan to attend Friday:

_____ Westinghouse Story _____ International Utilities Story _____ Undecided

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One User's Trial by Fire

It's the Hard and Dangerous Way to Break Into DP

By Michael Weinstein

Of the CW Staff

MERIDEN, Conn. — "Trying to improve our company's operation with a computer almost put us out of business," Frank Gilchrest of Napier Co., a jewelry manufacturer, declared.

In 1966, the firm started to look at computers as a tool to improve its order entry and accounting systems. Business was improving at such a rate that "the girls could not keep up," Gilchrest related.

"We didn't understand computer operations but we did know what we wanted to accomplish."

With his objectives in mind, Gilchrest went to several computer vendors for assistance and proposals.

A small system was chosen on the basis of cost and free training, he remembered.

Prior to the computer installation, in January 1967, Gilchrest and another Napier employee attended a three-week class — given by the vendor — in New York.

"The implication at that time was that after three weeks, we could return and start operating our system," he stated.

"At the time this did not seem strange to us, as we had no previous experience with computers, and viewed them as just a more complicated adding machine," he added.

With the short course behind him, Gilchrest started to operate his machine, but

"nothing worked."

"We had no idea what programming meant at that time," he said, and thought that each program had to be an entity in itself.

So instead of writing a master file and routines to work on that file, Gilchrest started to write one large program.

This program was to have everything needed to do the order entry applications. His initial thoughts were that the program had to be rewritten each time new orders were received.

Further, as the program had to include all the data in addition to the code, it soon began to run into the thousands of statements.

Soon it became evident that Gilchrest was having problems, so he called in his local technical representative.

"But he was as poorly trained as I was," he noted. In fact, he had attended the same sort of schooling that I had with

his previous experience being an operator in a bank."

So they took their program to a computer in Hartford to see if it would run on a larger machine. "It didn't," he said.

At this time, Gilchrest said, "we knew we needed expert help, so we called the vendor and asked for a specialist."

The specialist came, explained about master files and application routines, gave some advice and left.

"Every other week, the expert would come look at our program and write some advice on the back of envelopes or other scratch paper. We treasured these notes, and hung them on the computer, each time trying to implement the expert's advice before the next visit."

After about nine months of this work and rework, the program would run, but the troubles were not over.

"Our applications had major bugs, so that when a customer sent in an order for

\$500 we would ship him \$5 worth of merchandise," he related.

"After some months of this type of service we were actually in danger of going out of business. So we went back to the vendor and asked for a full-time expert."

"When the new expert arrived, he was astonished, amused and upset from looking at our code," he said.

"But after six months, we were able to rectify the problems. During this time we had to go back to a manual operation."

During the same period of time, Gilchrest learned more about computer operations so he could write his own code and operate the system.

Asked whether management at Napier was ever upset during those trying times, he responded: "They were upset but they looked to me to solve the problem. My problem was that I was looking at nobody."

ASM Explains Why It Left Foundation

Special to Computerworld

CHICAGO — The unpublished reasons why the Association for Systems Management withdrew last month from the Computer Foundation project include fears that the group would be powerless to change anything it did not agree with, and suspicions that a "sales crisis" was behind the move to have the CDP program supported by other organizations on an industry-wide basis.

These reasons were in addition to the official explanation given that only a few members of ASM were involved in computer practice certification interests.

In giving these reasons to an ASM member who had challenged the official line, an ASM spokesman emphasized that ASM was not against the concept of an "umbrella" society — but that it was convinced the foundation as currently organized was not such a society, and would make no real impact upon the DP profession.

When the Time Comes

When an umbrella society that would make a real impact should appear, the spokesman stressed, it would be a dereliction of duty not to support it.

The main surprise among the latest ASM reasons for withdrawal was the assessment that the CDP program was apparently in a "sales bind."

Data Processing Management Association figures issued to members of the foundation organizing committee indicated that income from examination fees was rising during the past four years. However this increase appears to represent the increasing number of people retaking the exam. A second look at the figures showed that first-time registrations had in fact dropped from 2,233 in 1970 to around 1,430 this year.

At the same time, both DPMA and ACM have had continuing financial problems during the past year, making it unlikely that the losses normally incurred by DPMA in supporting the examination would be able to be taken out of either society's reserves in the future.

*Pourquoi est-ce que je dois changer de langue?
Il m'a pris dix ans pour apprendre celle-ci.*

(Why should I switch languages? It's taken ten years to learn this one.)

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(Why is EDP getting more and more expensive?)

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Editorial

No More Funds

Congress should stop all funds for the development of the FBI-operated Computerized Criminal History System until its operational deficiencies and overall cost can be fully explored.

No more funds should be appropriated until the FBI and the Law Enforcement Assistance Administration can develop effective, meaningful guidelines to insure the accuracy and completeness of the information in the system.

A recent General Accounting Office report shows clearly that the system is plagued by operational deficiencies and that the plans of the FBI to overcome the deficiencies are clearly lacking in scope and substance.

In addition, the GAO report indicates that no one in either the FBI or the LEAA has given any really serious thought to the overall cost of development and operation of the system.

Only when these blanks are filled in can there be a knowledgeable debate over whether the system will be worth the cost and whether it will assure that individual liberties can in fact be protected in such a system.



'Sorry, Pal - It's Indelible'

Letters to the Editor

'RPG II Advocates Are Small Thinkers'

Green-hat accountants never die - RPG II won't let them... Among others, this statement refers to the DP manager of States Steamship Co. for his letter [CW, Feb. 21].

I work in a predominantly RPG II shop. I am the only die-hard Cobol man left. At least I was until the company outgrew the small-time batch-processing method and decided to go on to bigger and better things. They are contemplating a 370 DOS/VS with CICS.

All of a sudden reality hit. IBM's CICS doesn't even support its own RPG II. As a matter of fact, any sophisticated software does not support RPG II. Why doesn't it support this fine Mickey Mouse Language that only the old time green-hat accountants understand? Ask IBM.

RPG II is the big brother of RPG which was designed to help accounting departments convert from EAM equipment to 360/20 card systems without an extensive knowledge of DP techniques. Even the terminology of the language is the same as EAM terminology.

There is extremely limited control of I/O. There is no such thing as working directly in the I/O areas or redefining area in core. It is easier to write another RPG II program than to debug the present one.

Any systems man will tell you that you must design a system, using RPG II, around the limitations of the language whereas with Cobol or ALC you can design the system around the needs of the customer and program it accordingly.

Any RPG II shop that exists within a growth company is inevitably going to face a conversion problem, either to Cobol or ALC, lest the DP manager wishes to tell management that the company cannot grow into on-line terminals and sophisticated systems.

RPG II advocates are small thinkers with limited ability. They are trying to awaken the Romans, not the modern-day

analysts. They always refer to the Data Division of Cobol for comparison. They never refer to the Procedure Division vs the Calculation Section where one Cobol compute statement will accomplish six to 10 RPG II statements.

I do not think that Cobol is the ultimate answer to computer programming; however, it will survive, per U.S. Government requirements, over any and all languages. No matter what happens in the industry, it will support Cobol until something specifically replacing Cobol occurs.

I'm placing States Steamship Co. on my list of places not to send a resume. I prefer State of the Art growth companies.

Marvin S. Ruth
Systems Analyst
Hacienda Heights, Calif.

Design, Plans Make Language Successful

Two more cents for RPG II. Apparently the persons writing encomia of this language have the good fortune to be part of a team or leader of a team of professionals when it comes to programming. Give these people Cobol or Fortran and they would probably have equal success.

Success or failure using a particular language cannot be attributed to the language but to the design and planning (or lack of) which preceded the actual writing of the program. This would also account for ease or difficulty in debugging programs.

Blaming inefficiency on a computer language is really a cop-out. One had best examine system designs and programming techniques for the real culprits.

A few tips for disgruntled RPG II users:

- The basic cycle as explained in the Language Manual is sufficient; any more detail is superfluous.
- Liberal use of the DEBUG operation greatly reduces debug time.
- The cycle is readily overridden by use of the READ and EXCPT operations.

Michael T. Rusk
El Paso, Texas

Codasyl Work Based On Problem Definition

Current discussions of Cobol language development appear grouped more around problem definition (how much should be standardized) than around proposed solutions (Draft Proposed Revised Standard X3.23).

More than a decade ago, representatives of the computer industry, government and some very large DP users met and defined a problem. The scope of the problem was restricted to language specifications.

Considering the situation in 1959 and 1960, a more inclusive scope could very well have killed the standards development effort. The current work of Codasyl in PLC and Ansi in X3J4 is based on that problem definition.

Complaints by users or their would-be spokesmen that PLC is not considering items outside language specifications for standardization ignore that bit of history.

PLC cannot be expected to work on something without direction. Ansi is responsible for directing the development effort. Specifically, X3 directs the efforts of its working committee X3J4 and Codasyl.

Individuals who feel that the problem definition needs widening should address their comments to the appropriate authority: Sparc, c/o Ansi X3 Secretariat, Bema, 1828 'L' Street NW, Washington, D.C. 20036, with a copy to Robert Kearney, chairman X3J4, Bell Telephone Labs, Bisp Area Room 4D819, P.O. Box 2020, New Brunswick, N.J. 08903.

Comments may also be directed through the Acpa Standards Committee, P.O. Box 95, Kensington, Md. 20795.

James Manley
Treasurer
Association of Computer Programmers and Analysts
Kensington, Md.

Hit-and-Run Tactics Hurt Entire Industry

One point five cheers for Jerrold Asher ["User Deserves Sup-

port, Not Hit-and-Run Treatment," CW, Feb. 21]. The remaining cheers will be promptly delivered after the "how" is strengthened with the "why" analysis of these "hit-and-run tactics" and the necessary "what to do about it!"

Another marvelous piece of full-page color advertisement exists which proclaims that a pretty young lady is "... working on your software. On our payroll." For definitional purposes it must be made clear that the super-promising ad intends "your" to refer to the customer and "our" to refer to the company making these wonderful announcements.

Based on our experience, the ad should correctly proclaim "... working on our software, on your payroll" because we have spent many thousands of dollars in expenses, lost an even greater sum in revenues and, most significantly, had to stand by helplessly to see our integrity and reputation shaken because of the widening credibility gap between us and our customers.

Fire the pretty young lady who, it appears, turns out rotten systems software? Negative! Because she works on what she is told to work on and for as long as management decides until her services are needed elsewhere to build a newer mousetrap with which to catch new customers without giving a damn if the "old" mousetrap will work.

The scheme concocted by management works marvelously well, but is a very sad example of today's business ethics and the morality of a growing number of business executives.

It is rather simple to recognize the logic of the thing with simple arithmetic. Based on the closing price of that company's common stock as reported in CW's Stock Trading Summary of Feb. 21, this president does not have to care what happens to his customers anymore, or how hard his systems programmers have to struggle to right wrongs and do a good job.

He personally is worth in excess of \$14 million and that's what gives him the "right" and "might" to tell a very disap-

pointed and unhappy customer of his that he has the wrong attitude because the customer (that's us) was so frustrated that its president (that's the undersigned) picked up the telephone, called that president (guess who) and had the shock treatment of his life when told he had the wrong attitude because he complained about the defect-riddled delivery made by that president's company and which, five long months later, remains in that unusable state.

Perhaps if we would all accept a higher grade of responsibility and report to everyone else the "who done it," we would soon be rid of those Asher addresses. His conclusion is most deserving of being repeated: "The hit-and-run tactics of some firms are only profitable in the short run. In the long run they are pernicious to the entire computer industry."

Heinz Dinter
President

Computer Management Corp.
Miami, Fla.

Software Support: A Learning Process

As an NCR user, I can fully support the survey on "NCR Users Pleased With Hardware, but Want More Software Support" [CW, Feb. 28]. Software support is a sore subject with us. We pay \$800/mo for software support. The man assigned to us had never seen the package programs before this assignment, and his help to us was limited to only putting the package on the system; no program modifications were allowed.

After almost a year of this, we feel we have paid NCR well to train one of its analysts. This man is now qualified to install the hospital package programs; hopefully, he will be able to utilize this experience and the next user will not suffer.

Glenn T. Young
Director of Data Processing
Matagorda County
Hospital District
Bay City, Texas

(Other letters and viewpoints on Pages 11, 14 and 16)

For Want of a Filing Cabinet

Cobol Not Transferable Due to Lack of Right Support

For some years now, one of the questions a lot of people have been raising is, "Why isn't Cobol transferable from one machine to another when it is supposed to be machine independent? Isn't that what Cobol is all about?"

It's a very valid question and one to which at last I think I found the real answer. The answer is anything but what I expected it to be. As a matter of fact, even when I first discovered the answer I didn't realize it.

The answer is a four-drawer filing cabinet in Pittsburgh, Pa. The four-drawer filing cabinet concerned belongs to U.S. Steel, and is next to the desk of Warren Simmons.

Simmons introduced me to his cabinet so I could get a telephone number. He had no difficulty in finding the particular cabinet for it was the only one there.

In fact it was the only one he had space for. And that is the important point. For Simmons, as well as being an employee of U.S. Steel, is also their representative in many Cobol organizations.

Currently he holds two key positions. He is the secretary of the Codasyl Executive Committee and he is also the chairman of one of the Codasyl standing committees, the Codasyl Planning Committee.

To qualify for these positions, or indeed to be a member of Codasyl at all, a member must be an individual who "volunteers and has the support of his organization."

Simmons certainly volunteered, but has he really got the support of U.S. Steel? Is the provision of a filing cabinet — one single filing cabinet — supporting Codasyl or is it hamstringing Codasyl?

Personally, I think there is no doubt that U.S. Steel's "support" of the very important positions held by its representative is

not genuine support.

Simmons' Duties

Let us look and see what the duties of Simmons are and how they would relate to the one filing cabinet. Let us also look and find out what the consequences of not having better support from U.S. Steel have been in the past year or so.

As secretary of the Executive Council Simmons has to maintain the records and correspondence not just of the Executive Council but of the whole of Codasyl.

Simmons is the key person with whom all documents are supposed to remain. Moreover they are supposed to be publicly available since the work of Codasyl is in the public domain.

That isn't just an idea. It is one of the fundamental purposes of Codasyl. The only way this work can be in the public domain is to keep all the records of it available to the public.

Certainly committees which meet inside this and other countries, and which do not permit the general public to come to their meetings, cannot be said to be keeping their work in the public domain.

But that right is enshrined in the maintenance of the records of Codasyl, and the accessibility of them. But the filing cabinet is not large enough — so the public does not have such necessary access.

Of course Simmons has some specific operations for the Executive Committee itself. He has to maintain the records and the minutes of the committee. This maintenance also is supposed to be performed in the public domain. Again, actually owing to the lack of the necessary support by U.S. Steel, it is not happening that way.

Planning Committee

As well as being executive secretary to the Executive Committee, Simmons has another duty. He is also the chairman of the Codasyl Planning Committee. This is a key committee, for this is the committee which is supposed to monitor the operations of the other Codasyl committees (including the Executive Committee) and to find out whether the goals of Codasyl are being attained and if not, why not.

It is to this committee that questions should come such as the one we started with, "Why is Cobol not in fact transferable? Isn't that what Cobol was all about?"

This of course would be a duty which, if

properly handled, would require the Planning Committee to check a considerable pile of records. This has been acknowledged in the past. Until last year 20 sets of all the proposals to change the language, and copies of the actions of the Programming Languages Committee (PLC) were being sent to Pittsburgh for the use of the Planning Committee in this operation. Of course this was only one part of the Planning Committee's work.

The other part was to obtain information from users, etc. All this material then had to be made available to all committee members.

The committee function is to "assimilate" the material. For this they need to have individual access to it, time to go over it and consider it, all of which puts a very heavy burden upon the secretarial duties of the Planning Committee — a burden that was understood would be supported by the chairman's organization, in this case U.S. Steel.

Now Simmons is not the secretary of the Planning Committee, he is chairman. But then, no one else is secretary either. Simmons has the right to appoint a secretary and when the Society of Certified Data Processors discovered that no such secretary had been appointed by him, it volunteered to take on the role with the full understanding of just how much work would be involved.

Simmons had no objection, but didn't use his power of appointment. So now he is responsible together with the other committee officers for all the secretarial duties including this large clerical-type operation.

U.S. Steel apparently still feels the provision of one four-drawer file cabinet is enough to support him in this position. Unless, of course, we are to take into account the fact that he does have a Planning Committee vice-chairman.

The vice-chairman is appointed by the chairman. Out of all the members of the committee, Simmons appointed a fellow U.S. Steel employee.

U.S. Steel also provides the vice-chairman with a four-drawer filing cabinet.

The Results

As a result of this situation many things are happening. To start with, Codasyl records are not available to the public.

Nearly a year ago a number of people tried to obtain access to the Codasyl records. This request was repeated during a visit to Pittsburgh last March.

At that time it was discovered that not only were the records of the Executive Committee unavailable but the full records of Codasyl were also unavailable. Not even the records of the Planning Committee itself or the minutes of the previous meeting were available to its own members.

Why? Because they and everything else

were in the basement of Simmons' home, miles away. Some of them apparently were in packing cases. The packing cases had probably been supplied by U.S. Steel during a move two years ago, so perhaps we should count the cases in as part of the U.S. Steel support.

Some of the records had been taken out so the chairman of the Executive Committee, Jack Jones, could reconstruct his file of the Codasyl minutes.

Data Missing

In the meantime, the members of the Planning Committee were not getting the information they should have been getting. After Simmons decided that the Planning Committee did not need the records of what was being proposed and would be satisfied with a copy of the report written by the Programming Languages Chairman, the Society of Certified Data Processors joined the committee.

Simmons was receiving material to be assimilated, but it wasn't getting to members of the committee. At least it never got to the SCDP.

So we, and presumably the other members, are unable to carry out our operations.

And that is basically the reason why Cobol is not working. Cobol is not working because the Codasyl Planning Committee, which is supposed to gather information as to how goals are being carried out, is not getting the information necessary for this task.

The reason the committee is not getting the information is simply because U.S. Steel is not supporting its representatives adequately. In a nutshell, U.S. Steel's lack of support of these important functions is the reason why Cobol is failing.

So now you know. To summarize, here are the reasons I believe U.S. Steel is the prime cause of the failure of Cobol.

- Failure to properly support its employee as secretary of the Executive Committee and therefore keeper of the full archives of Codasyl in the public domain.
- Failure to support the chairmanship and secretariat of the Planning Committee and to provide members of the Planning Committee with the material needed to perform their duties.
- Failure to insist that action they do support, such as the distribution of Codasyl newsletters, only takes place when properly authorized.
- Failure to react in a positive constructive manner to criticisms like previous ones which I know have drawn their attention to some of the anomalies involving them and Cobol.

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The Taylor Report

By
Alan Taylor, CDP



Did You Take CDP Exam?

Will anyone with copies of CDP review courses or parts of such courses sponsored by the DPMA chapters — not the commercially available courses — please contact Alan Taylor, c/o Computerworld, giving details of the course sponsorship.

Church Has Responsibilities, Too

Valentine's Day was a very happy day as far as I was concerned, because two letters written to me at that time changed my thinking on the matter of church organizations, and I now think matters have improved greatly.

The first letter pointed out that the operation was a two-way street, and that the churches, as well as the technicians, had

Any ideas on possible structuring of this operation are welcome.

Here are the two letters concerned.

I am pleased to volunteer my services to the Mennonite denominations as an adviser on the technical problems involved in computer processing ethical standards. I know of a number of experienced college students who would be delighted to assist various denominations in a similar way.

Thank you for helping both the churches and the data processing community to be aware of their mutual responsibilities. — R. Waldo Roth, computing center director, Taylor University, Upland, Ind.

Your continued efforts to arouse industry interest in the ethical problems of data processing are very much appreciated.

When you have further response to your calls for volunteers perhaps you and I ought to discuss where we go from here. — Christopher Raible, Director of Extension, Unitarian Universalist Association.

Readers Respond

responsibilities which perhaps they had not been taking. Thinking of this, I must say I agree with him, but until I opened the next letter I was not certain that the churches — any of them — would be interested in taking up their responsibilities actively at this time.

The second letter showed at least one denomination is taking up its responsibility. This I think puts a very different light on the whole matter. It may mean that we have to redesign the structure so that both the responsibilities of data processors, and the responsibilities of the churches are equally operational.

Letters to the Editor

Hire Temporary Employees To Ease Staff Problems

In response to the article on selection and training of data processing personnel in the March 7 issue, I feel I should add another viewpoint.

Because the largest parts of budgets are spent on personnel, an employer should take a considerable amount of time before hiring a person for a vital job. When the position is found to be a necessary function in the company, there is usually an immediate need for a person to fill it.

The cost of training and evaluation could soar if the person hired was not fully qualified to fill the position — a characteristic only found through experience and actual on-the-job training on the

user's system. All the testing in the world could not qualify a person for a job.

A new employee is an investment to the user. Through his knowledge and expertise an important function of the company's business will be carried out. When looking for a person to fill this type of vital position it would be wise to hire a temporary employee most closely related with the job requirements associated with the actual position.

Many people disagree, but the cost of bringing a temporary employee into the installation is considerably less than hiring a person in a "rush" situation.

James F. DiVito

Manpower, Inc.
Data Processing Division
Boston, Mass.

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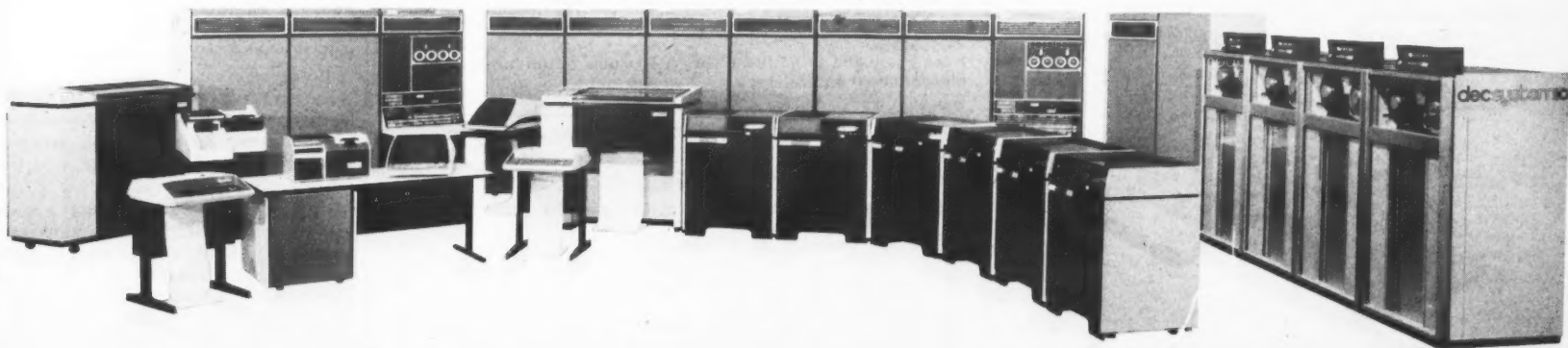
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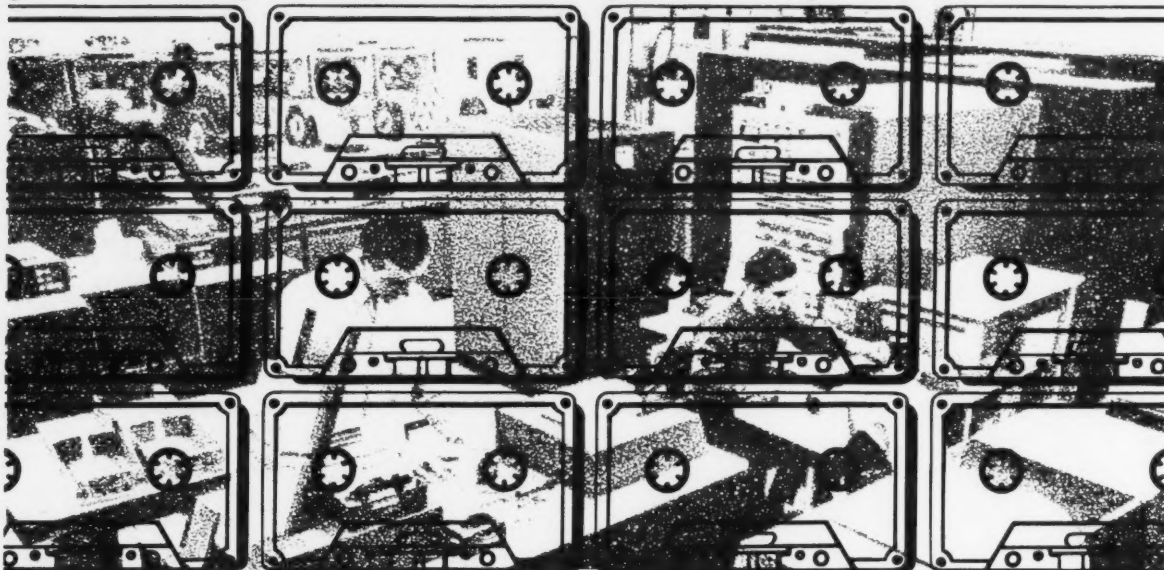
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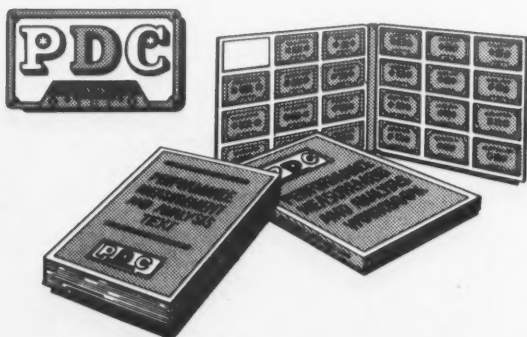
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The Professional's Viewpoint

Our Professional Future: 2 Views

The following letters present two views of the data processing professional future. The first letter, written by Nelson Cyr, national director of the Association of Computer Programmers and Analysts, sees the Computer Foundation as a transition to a single unified society. The second letter, from Hamilton Armstrong Jr., president of the Society of Professional Data Processors, sees the end user as the keystone of a master plan.

Foundation as Transition

The proliferation of different computer societies in this country today and their attempts to establish meaningful certification programs within their own spheres of specialties begs the question, will the U.S. eventually need an American Computer Society?

A society akin to the British Computer Society, perhaps, which provides a national professional organization that encompasses hardware and software designers, business and scientific user groups and the academic community... I concur with

H.R.J. Grosch that such a step is inevitable and a definite prerequisite, if the U.S. computer industry is going to achieve significant success in defining an essential body of knowledge — something that is given a great deal of lip service by many, but very little affirmative action.

Furthermore, I feel societies today must prepare the way for that eventuality. The Computer Foundation is a good place to start. We are now in a transitional phase and must lay the proper groundwork for a responsive and flexible entity.

One Society...

I envision the possibility one day of the foundation operating under the auspices of a single, unified computer society in the U.S. — with special-interest groups such as DPMA, ACM, SCDP, SDE, Acpa and others providing unified support for administrative staff, specialty publications and focus areas for the specialists.

The American Computer Society (or whatever) would take care of overhead, handle national conferences and interact with the public, with users, the government and manufacturers.

The society would also, through the authoritative functions of its Computer Foundation, concern itself with other facets of the computer field such as: hardware/software design criteria, social responsibility, interface, data exchange and performance standards, and, in general, represent the computer industry as a national, responsive entity much like the British Computer Society.

I propose that these considerations be kept in mind as the foundation is being structured. Further, I recommend modifying the bylaws in such a way as to allow the foundation to function at first as a separate entity supported and controlled by a board as proposed (with some changes in the executive committee's statement of power). I also point out the need to look ahead and anticipate the role that the foundation could play in effecting a transition to a unified computer society.

End User as Keystone

I was delighted to read H.L. Robinson's letter to the editor [CW, Jan. 31] stating "we should... recognize individuals' wants before (professional) groups." That credo should be the first and great commandment of the data processing world!

However, to reach for the sun, it is not enough to jump into the air. Three accomplishments must be achieved before this dream can become a reality.

First, the profession must have set up a bill of rights to protect all users of data processing.

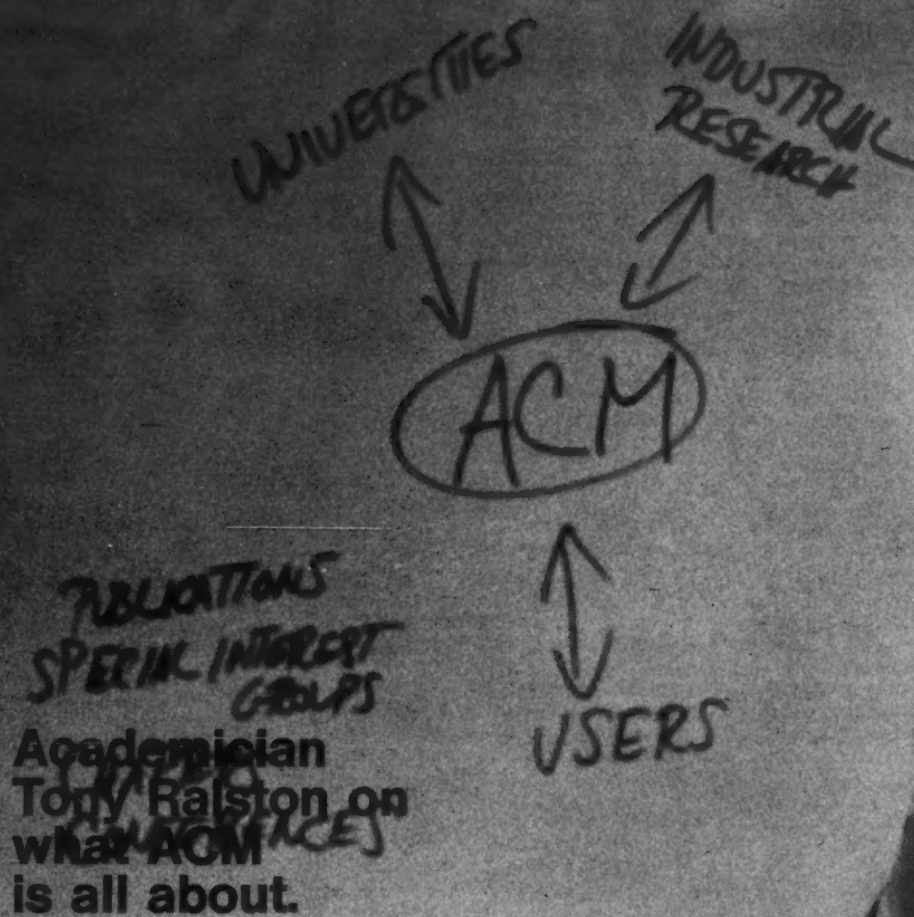
Secondly, a court of appeals known to all (manned by CDPers) would act as judges upon the complaints in relation to that already established bill of rights. There the user should expect remedial action if his complaints are justified. Lastly, some sorts of stigma must be defined for any and all offenders.

Why, for example, does Alan Taylor bring so many various and sundry groups into play? I feel he is laying a foundation for the development of all those desirous of a commonly held bill of rights (code of ethics) — understandable to all men in all walks of life (not something in hexadecimal).

I am assuming he is creating the very judiciary system I spoke of from his certified data processors. This, in turn, will be balanced by a congress of DP professionals.

The keystone of his design, judging from his various columns, will be the end user who must be heard in court when his privacy is threatened or he has been erroneously billed.

It does, however, seem like a strong master plan that could conceivably change our so-called "profession" from a group of charlatans or self-interest groups, such as lawyers and doctors, into a true body of people interested in heightening their standards of performance.



A three-way bridge to technical vitality.

Tony Ralston is the new President of ACM. He's a colorful professional and academician with a long career in numerical analysis and computer science. He has some strong ideas on the goals of ACM and the needs it fulfills for computer professionals.

"ACM was once an academic society," says Tony. "But now we're far more than that. We represent a sort of three-way bridge between the academician, the research and development scientist and the practitioner. The person at the

leading edge of computer science, the individual in the hardware and software lab and the user applying computers to practical business and scientific problems. We try to stimulate cross-talk between all three.

"Getting research results into the mainstream of computing isn't easy. It needs this kind of interaction. Active participation. A professional commitment to both the science and the practice of computing. That's when computing becomes a career—

and not just another job. That's technical vitality. And that's what ACM is all about."

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Letters to the Editor

CDP Certificate Downgraded

In response to the recent questionnaire concerning the termination of the CDP exam until the exam is proven effective [CW, Feb. 28], I question the validity of any project or endeavor that prevails untested and unproven.

How can any body, group or assemblage claim for its members certification, when the certification process itself has not yet been proven acceptable? Are we to violate the analytic technique we supposedly practice, by recommending or installing a system and perform the initial systems study afterwards?

In my opinion, the current CDP certificate has little significance in recommending the professional competence of any individual.

Do those who sponsor the issuance of a certificate harbor the opinion that data processing and computing sciences have so little merit that recognition of one having the minimal skills for certification requires the least amount of effort?

There are many professional organizations, whose members are worthy of professional recognition, that require much more than just one exam so general in scope that it takes on the appearance

of a hodge-podge of trivia.

I still would gladly accept any certification process that is consistent and comprehensive.

J. Frank Ellmer

Croydon, Pa.

CDE Program Is Not a Test

The Society of Data Educators appreciates numerous instances of mention in "The Taylor Report" as well as elsewhere, but we would like to correct one misconception.

The CDE Program is not a test. The CDE Program attempts to identify and evaluate data educators who are *already competent* (we do not make them competent, nor do we claim that the CDE in and of itself makes them competent).

The CDE Program does make use of tests where appropriate, and that is as little as possible. Tests are always second-hand evidence of competence, and we prefer the first-hand route of letters from responsible persons attesting to the proficiency of CDE candidates.

The test, used only for some individuals in step number one, is just one of five requirements, and it is used as a gross screening device only. Nevertheless, we collect data from candidates for test revision on a regular basis.

As for the mysterious Mr. X who appeared in one of Taylor's columns [CW, Dec. 13, 1972] he seemed to have been referring to one of the old mimeographed validating tests that we used to collect data for constructing our original printed test. Even so, everyone who received those tests, as well as those who receive the new versions, sign this statement: "I certify that I will keep the contents of this examination confidential."

Enoch Haga, PhD, CDE,
Executive Director

The Society of Data Educators
Livermore, Calif.

On Respecting One's Privacy

Having once berated *Computerworld* for invading my privacy by selling my name and address (by selling your mailing list) I must congratulate you on taking the progressive step of offering your readers the option of "check here if you do not wish to receive promotional mail from *Computerworld*," which appeared on the recent BPA Audit form you sent me. I trust this means I will receive absolutely nothing more than CW (and renewal notices) as a result of being a subscriber.

At the same time I must say I was rather put off by the flyer which arrived with the audit card. To refresh your memory it attempts to flatter the reader into completing and returning the card by saying "... you're somebody special. You are on this magazine's (sic) circulation list because you have been *qualified* as an important decision-maker. People who don't qualify, don't get the magazine."

Is there really any criterion applied to prospective subscribers other than having the \$9 for a year's subscription? I'm reminded of the hypocrisy exhibited in a form letter (of course, it was highly personalized with my name appearing several times in the body of the letter) I recently received from *Business Week*.

It asked me to join its highly selected list of subscribers, saying it considered me more qualified as a subscriber than the governor and two U.S. senators of my state. Where had it gotten my name in order to make that judgment? From the *Playboy* subscription list!

Paul Armer

Stanford, Calif.

We quite agree that it would be far-fetched for anyone to send us \$9 for a subscription if they did not have a serious interest in electronic data processing.

However, knowing who our readers are by title and business does give us considerable direction in planning editorial coverage.

And, last, but not least, we subscribe to the Business Publications Audit of Circulation — an organization geared primarily to "free" or "controlled" circulation books — to stay competitive in terms of getting advertising for our publication. Ed.

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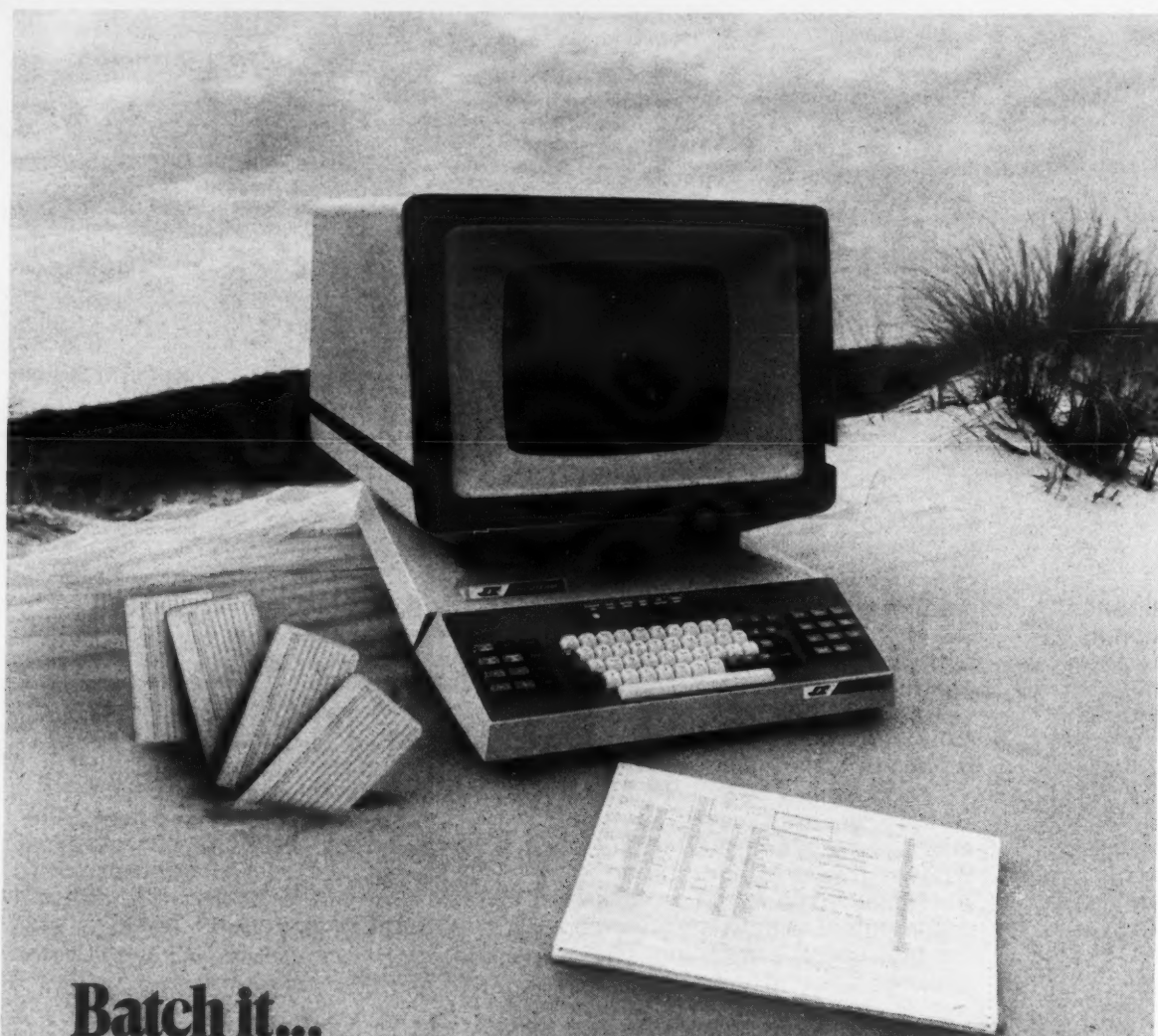
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Time-sharing



the Time-sharers

Several time-sharing (remote-computing) vendors have added new services lately. ITT Data Services based in Paramus, N.J. has, for instance, extended its Crossbow service to include support for TSO under IBM's OS/360.

Philadelphia based Kidde Computer Services has implemented RJE/Hasp for its subscribers along the East Coast, and International Timesharing Corp. has added an extended Fortran IV compiler (Exfor) as well as a new accounting application.

Interactive Data Corp., Waltham, Mass., has installed a new version of its monitor system which includes an extended Isam, updated language processors, and simultaneous disk updating from separate virtual machines.

The Time-Sharing Division of Applied Data Research (ADR), Princeton, N.J., has expanded the capacity of its Decsystem-10 and created a dual processor configuration, the ADR Teleplex System.

Word/One text editing from Bowne Time Sharing Inc., NYC, has been supplemented with an advanced information retrieval system and support for IBM Mag Card Executive Typewriters as output devices.

ITT Data Services's implementation of TSO will operate on a 370/155 under release 21.6 of OS/MVT. Initial usage is expected to come from clients evaluating TSO for their own in-house system, with production-oriented applications developing later.

Partially in anticipation of the production work, ITT Data Services is also adding OS On-Line Full Service Storage, under which subscribers may allocate cylinder space incrementally rather than in large blocks as required by some other systems.

Kidde's RJE/Hasp allows the customer with an IBM 2770/2780 or compatible terminal to have high-speed I/O, and to work with his choice of ANS Cobol, Fortran G, PL/I or Assembler. Prime and off-time rates are available so that users can make appropriate trade-offs between immediate service and cost.

Extended Isam (Xsam), now on Interactive Data, is described as a logical replacement for IBM's Isam, offering faster access times, less disk space requirements, and variable length record support. Xsam also provides complete Setl support to optimize the use of transient and core-resident system modules, and more efficient handling of overflow records, to reduce the need for file reorganizations.

ADR's move to dual processor configuration is coupled with an expansion of memory and support for a broader range of terminals. The result, in ADR's view, is a system with optimal reliability — since each processor can handle all communica-

tions and can access all peripherals in case of a component failure — and extreme flexibility for the user.

Extension of core available under Computer Sciences Canada's RJE and CRJE support is expected to be particularly useful to Fortran users, vendor spokesmen felt. With 130,000 words of Sigma 7 storage available for each program segment, the users will be able to run larger programs without the "mechanical" complexity of employing numerous overlays to fit into less memory than they really need.

Bowne's Word/One text processing has been enhanced with an expanded capability to handle very large documents, as well as by providing an information retrieval system. The service has increased the amount of working storage available for any single document from 9,999 lines to 24,999 lines.

The retrieval operation (Abstract) allows users to search an entire multi-page document or any specific part of it, and to retrieve information in paragraph form.

ITT Data Services is at Garden State Parkway and Route 17, Paramus, N.J., 07652, while International Timesharing is based in the ITS building in Chaska, Minn. 55318.

Interactive Data is based at 486 Totten Pond Rd., Waltham, Mass. 02154; and Applied Data Research is at the Route 206 Center, Princeton, N.J.

Kidde is at Red Lion Road and Philmont Ave., Huntingdon Valley, Pa. 19006 and Computer Sciences Canada is at Place du Canada in Montreal.

Federal Rules Run Utility Model

PITTSBURGH — A corporate modeling system which reflects the special requirements of the utility industry is now available as a service or as a package for large scale in-house CPUs from Westinghouse Electric Co.

Unlike many generalized modeling schemes which allow the user to define his own accounting plan, this program's accounting structure is based on federal Power Commission rules.

Developed by the corporation's Power Systems Planning group, the software is a mathematical simulation of the utility's financial environment. With it, a user can forecast the utility's future balance sheets, income statements and cash flow reports, a Westinghouse source explained.

The complete model is made up of several submodels which are used to describe individual functions to be considered by financial planners. These special functions include physical plant, depreciation and the impact of regulatory agencies.

X3 Reopens Standards Unit For OS Control Languages

By Don Leavitt
Of the CW Staff

WASHINGTON, D.C. — The study group on operating system control languages has been reactivated by American Normal Standards Committee X3, Computers and Information Processing, to determine what technical feasibility and economic justification there might be for development of standards in this area.

An earlier group "surveyed the world to death" — as one critic put it — but effectively dissolved last summer without making any final recommendation when the then-chairman felt he had no more time to devote to the project. The new effort will be headed by Dr. Philip H. Enslow Jr. of the Office of Telecommunications Policy.

JCL, Too

The phrase "operating system control languages" covers the control and status aspects of, at least, interactive, time-sharing and batch-processing systems. It includes, for example, what IBM 360/370 users normally call JCL, X3 secretary Robert Brown noted.

Standardization of OSCL would make it easier for users to communicate with their computers, advocates claim. If standardization does finally take place, users of Burroughs' MCP, or of IBM's OS, "or whatever," might be able to use the same control cards, group vice-chairman John Strain of the Army's Computer System and Support Evaluation command said. The current effort will be very time-conscious and concerned with making a

decision. "If after three or four months, we don't feel we can complete the study within a year-and-a-half or two years," Strain said, "we may just decide that it is not going to be a worthwhile effort for us to pursue and that even the study effort itself is not productive, at least at this time."

Enslow and Strain are recruiting people to work on the evaluation, and are not seeking public comment, for now. "We are interested in people with direct knowledge of operating systems, control languages and an idea of what users actually need," Strain said.

He wants people who have had experience or responsibility for the implementation of OSCL and who know what the control commands actually do to the operating systems. He said he would like "some participation" from users "who have a bone to pick and who want to help us study the problem."

Neither Enslow nor Strain want a massive study group, but they do want representation of experience with as broad a range of operating systems as they can get. "We certainly don't want 65 people at our meetings, all of whom are OS/360 users," Strain noted.

First Meeting in May

Strain hopes to have found enough people who have an interest in the outcome of the study "and who have a background such that they have something to offer" so that a first meeting can take place early in May.

The original study group, set up by X3's Standards Planning and Requirements Committee (Sparc) about three years ago, was chaired by Millard Perstine of System Development Corp. It did a massive job of collecting material and turned in a 600-page report early last summer.

At that time, Perstine said his group had reached some tentative conclusions, but needed more time — which he personally could not spare — before it could make a final recommendation on whether or not to advocate development of a standard.

Sparc has been looking for almost a year for someone to head up the second phase of the study. Enslow has taken the assignment as an individual and not as a representative of OTP, Brown stressed, noting that "operating systems are a hobby" for the new chairman.

The rekindled Sparc group has no desire to standardize operating systems themselves, but just the "human interfaces" with the systems. Reasonably, when a user says READ on a control card, it should mean the same thing regardless of what operating system he is using, Brown said.

Strain can be reached at HQDA (CSSE-ST), Nassif Building, Falls Church, Va. 22041.

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Updated Cobol Programs Analyzer Spots Both Untested and Time-Chewing Code

PHOENIX — OS/360-370 users may gain considerable help in the design, debugging and performance improvement of their programs with the advanced version of Cotune, the Cobol program analyzer now available from Capex Corp.

Chief among the new features are summary reports which pinpoint both untested and time-consuming code within the user's program.

Identification of untested code may indicate either an incomplete set of test data or a truly inaccessible portion of the program logic, a Capex source suggested. In either case, the situation is brought to light and can be corrected, he added.

Inefficient Logic

Identification of time-consuming code may point to inefficient logic, or it may simply confirm that most or all of the data exercises the same path through the program.

Changes in response to the Cotune report would tend to improve the performance rather than alter the fundamental logic of a program, Capex noted. Unlike the previous release of Cotune, the cur-

rent implementation can be used with virtually any Cobol program, including those used in planned overlay structures or dynamically loaded by run-time executive routines. In addition, users may now select analysis at the sentence level, the paragraph level, or both, the company said.

That option emphasizes one of the major strengths of Cotune compared to some other Cobol program analyzers, Capex noted.

All reports generated by Cotune tie back to the user's source programs, rather than to absolute core locations which the user would have to manually "translate" into the same source references before he could use them anyway.

Cotune produces a profile of program execution, showing, next to each statement, the number of times it was executed and a histogram showing the amount of CPU time used.

Statements resulting in abnormal program termination are also identified in terms of the user's source listing, thus avoiding the need to find and interpret the proper Program Status Word (PSW) before debugging can begin.

Cotune is available on long term license for a one-time charge of \$3,950, plus \$395/yr maintenance, or on a 12-month lease for \$200/mo. The firm is located at 2613 N. Third St., 85004.

Student Accountant Package Available For H200/2000 Line

WALTHAM, Mass. — Educators and school administrators with Honeywell Series 200/2000 systems — including the small Model 58 — can handle most of their student accounting functions with the Scribe software now available from Honeywell as a \$2,400 separately priced package.

Installations with Series 1640 or Model 429 systems can utilize the Edinet library of problem-solving programs, individualized arithmetic instruction guidance counselor and teacher aid systems. Most of the 300 programs in the library are free, a Honeywell spokesman noted.

NCR to Offer COM Service In All Centers by End of Year

DAYTON, Ohio — By the end of 1973, NCR plans to offer computer-output-microfilm (COM) services at all of its data centers in the U.S. and Canada and at centers in England, Australia, Japan, Switzerland and Denmark. It is now available in 15 of the company's centers in the U.S.

Users can save massive amounts of paper and substantial postage or other delivery charges through the use of COM, an NCR spokesman said, noting that even a 1,400 page report (which stands a foot high and weighs 38 pounds) can be reduced to just seven microfiche and mailed for eight cents.

System Development Corp. Offers On-Line Chemical Abstract Search

SANTA MONICA, Calif. — System Development Corp. has started on-line bibliographic search service of chemical literature.

Called SDC/Chemcon, the service offers instant access to the Chemical Abstracts Condensates, produced by the Chemical Abstracts Service of the American Chemical Society. The firm is located at 2500 Colorado Ave., 90406.

Sun Oil to Market DP Services

PHILADELPHIA — Sun Computer Services, a newly-formed unit of Sun Oil Co., has begun full-scale marketing of Sun's in-house data processing capabilities.

Included are consultation, proprietary software, systems design and development, time-sharing, batch processing, data preparation and data handling.

By the end of the year, Sun expects to complete its computer network with IBM 370/168s located in Philadelphia and Tulsa. The firm is located at 1600 Walnut St., 19103.

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Data Briefs

AT&T Calls Model 40 a TTY And Not a 'DP Service'

WASHINGTON, D.C. — AT&T has told the FCC that the Model 40 TTY is "an advance" in the Teletype Corp. line of teletypewriters. It incorporates the latest electronic technology... in information display to aid in message preparation and is capable of higher speed to better utilize telecommunications facilities."

The AT&T letter was sent in response to an FCC inquiry concerning the Model 40 display. The issue had been raised by Incoterm Corp. [CW, Feb. 21] which had told the FCC that the CRT might violate existing antitrust regulations.

"Teletypewriters are designed for... communications uses including communicating in various ways with data processing equipment," the AT&T letter said. The Model 40 performs the same functions with greater flexibility and more efficiently, it added.

Bell System TTY offerings "in no way constitute a data processing service," the letter from T.W. Scandlyn, assistant vice-president, stated.

Audio System Stores 16K Words On 2314-Type Disk in Digital Form

HAYWARD, Calif. — Qantel Corp. has announced an audio-response system that can store a vocabulary of up to 16,000 words.

The system stores its vocabulary on a 2314-type disk in digital format, which is converted through a voice-response controller into audio tones.

The voice-response system can operate with IBM 360/370 CPUs or can be supplied as a complete system including its own processor. The system is compatible with Bell Touch-Tone phones and Bell 403, or equivalent data sets.

A complete system including CPU, disk and audio controller costs about \$45,000 or \$1,100/mo. The controller equipped to handle two lines costs \$5,000 or \$125/mo for use with the user's CPU.

Qantel Corp. is at 3474 Investment Blvd., 94545.

L.A.-Houston Net Link Approved

SAN FRANCISCO — Southern Pacific Communications Co. has obtained FCC approval to construct the Los Angeles-to-Houston segment of its proposed 11-state specialized carrier network.

The Southern Pacific link will include 53 microwave towers and service to San Diego, Yuma, Phoenix, Tucson, El Paso and San Antonio. An additional segment from Los Angeles was approved earlier and is scheduled for service by June.

Much of the Southern Pacific carrier system will be built along its existing private communications network operating to support the firm's railroad and associated operations.

Westar to Handle Data

WU Reveals Satellite Plans for 1974

By Ronald A. Frank
Of the CW Staff

NEW YORK — The first commercial satellite, to be launched in April 1974 by Western Union Telegraph Co. (WU), will be equipped to handle 1,200 one-way voice circuits, or about 50M bits of data on each of its 12 transponders.

Details of the Westar service were given by Peter Alden, WU assistant vice-president, at the Annual Systems Management Conference of the American Management Association. The service is scheduled to begin in mid-1974, a WU spokesman said.

Earth stations in the Westar system will be built at Atlanta, Chicago, Dallas, Los Angeles and Glenwood, N.J. A later station may be constructed in Hawaii pending FCC approval.

Each Earth station will have a 50-foot antenna pointed at the prime traffic-carrying Westar vehicle and each will be equipped to interface with WU's terrestrial microwave network. Two satellites will be launched with the second used as a spare and a third vehicle available on the ground depending on traffic requirements, Alden said.

Similar to Telesat

The Westar satellites will be similar to the Telesat vehicle now in service over Canada, and also will be built by Hughes Aircraft Co. The spin-stabilized synchronous satellites will operate at about 22,300 miles over the equator with an expected life of seven to 10 years.

A propagation delay of about 250 msec will result from signals transmitted from an Earth station to Westar and then sent to a second Earth station, Alden estimated.

Data circuits will be affected by this one-half second round-trip delay, Alden said — especially polling protocols such as those used with the WU Multipoint Data Service. This type of polling procedure would have to be modified for satellite use to allow for the longer delay.

Medium- and high-speed data users who utilize Westar will have to incorporate revised handshaking and error-control procedures at higher transmission speeds to effectively use the new service. But satellite-transmitted data will be "less susceptible to errors" than conventional terrestrial systems, Alden predicted.

Transponder for Lease

WU will lease whole transponders to single users or groups of users and to other carriers. A transponder can be accessed through WU or customer-provided ground stations and WU will allow interconnection of its earth stations to customer-provided terrestrial systems,

Alden explained.

Users will lease a transponder on either a "fully backed-up or unprotected" basis with an appropriate cost differential for each type of service. While rates for a transponder "will be substantially below" those of Canada's Telesat, exact rates will depend on the requirements of the user.

WU will allow multiple access of a leased transponder on the Westar satellite and will allow users with private networks to access a transponder from a mix of WU and customer-owned Earth stations, for maximum geographic coverage. But customer-provided equipment will have to conform to WU satellite disciplines.

Limited Interconnection

Interconnection at the WU Earth stations will not be possible for bandwidths of less than 60 voice-grade channels. But users can obtain smaller increments at cities in the system or "terrestrial junction stations."

For data transmissions, modems and multiplexers will be used to access analog channels, or TDM equipment can be used to subdivide the 50M-bit capacity of a transponder, Alden said.

Initially, voice-channel groups will be subdivided into 2,400-, 4,800- and 9,600

bit/sec synchronous data channels and 1,200 bit/sec asynchronous data channels. This type of multiplexing will be similar to the WU hybrid service on the present Atlanta-to-Cincinnati route. TDM equipment to subdivide a transponder directly will be available in 1975-76, he said.

The Westar system will interface at ap-

"But satellite-transmitted data will be 'less susceptible to errors' than conventional terrestrial systems."

propriate cities with the digital network now being constructed by WU. For the smaller user, voice-grade facilities could be available for "two-thirds of the current private-line mileage rates," Alden estimated.

Other services to be provided include: 1.544M bit/sec service; bulk medium-speed synchronous facilities for Datacom users; medium-speed channels for facsimile; point-to-point low-speed asynchronous data channels between "high-capacity cities"; and switched data services operating asynchronously to 1,800 bit/sec and synchronously up to 4,800 bit/sec.

Varian V73 Users Get Vtam For Telecommunications Support

IRVINE, Calif. — Varian Data Machines has added a data communications software system to its V73 minicomputer.

The Vtam system combines a generalized telecommunications access method with the earlier Vortex file structure and multitasking software to form a total communications operating system, the firm said.

A data communications multiplexer offers improved data handling compared with other comparable systems and allows 60K bytes of throughput, according to the firm. The multiplexer operates with both synchronous and asynchronous lines at rates up to 50 kbit/sec.

Adapts to Line Growth

In addition to handling diverse line speeds, the system adapts to line growth requirements. The table-driven multiplexer reduces programming overhead by handling data on a message basis. The multiplexer is microprogrammed, and services up to 64 full-duplex lines.

In a hierarchy of multiplexers, virtually any number of I/O lines can be connected into the V73-communications system.

The Vtam software allows the user to program without attention to multiple terminal and line characteristics, the firm said. Vtam is said to reduce network control and terminal protocol to READS

and WRITES at the logical I/O level, allowing programming resources to be focused on application software.

Host or Front End

The V73 with the data communications software can serve as a host CPU or as a front-end processor in communications nets. Dual processors can be used in message-switching and data base management applications.

The V73 as a front end with Vtam can interface with IBM 360/370 mainframes as well as most major CPUs, a spokesman said. It can attach to either a multiplexer or selector channel on IBM CPUs.

The mini-based system can operate at a lower cost than comparable IBM communications controllers, Varian said. For existing V73 users with Vortex software, the Vtam nucleus can be added for \$500.

Typical Processor Cost

A typical single processor system with 64 lines, Vortex and Vtam software and a standard set of V73 peripherals plus 32K of storage would cost about \$70,000, a spokesman estimated.

Various processor configurations range from \$10,000 to \$100,000. Monthly lease rates and maintenance are available.



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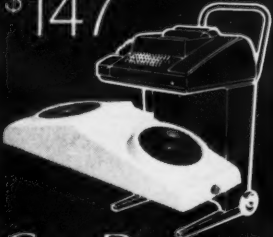


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Programmable Front-End Processor Controls Local and Remote Networks

By Judy Kramer
Of the CW Staff

HOUSTON — A programmable front-end processor which can control a local or remote terminal network and communicate with a central computer is available from Texas Instruments.

The DXS Data Exchange System is designed for on-line data entry and inquiry from CRT terminals or Touch-Tone telephones.

Each DXS/terminal system appears like a standard terminal network to the central host computer, a TI spokesman said. In its present configuration it is being used with 360/370 systems to emulate an IBM 2848 terminal controller and 2260 CRTs.

However, it could be configured to operate with any host computer and any multidrop-type terminals, he added.

Each system is built around a

pair of TI 960A minicomputers. One CPU manages the terminals and the other handles the basic functions. When data is entered into the system, DXS validates and formats the data and stores it on disk until the host interrogates the system.

There are three basic configurations of the system. The DXS-I supports up to 50 Touch-Tone telephones for input of numeric data.

The DXS-II accommodates up to 64 multipoint CRT terminals for processing of alphanumeric data. With terminals of this type the user can also perform inquiry functions, polling the central computer via the DXS. If hardcopy output is required, a

printer can also be attached to the system, the spokesman said. Badge-reader and voice-response terminals are also possible.

The DXS-III supports both telephones and CRTs up to a combination of the limits of each.

Prices begin at \$65,000 for a basic DXS-II; \$90,000 for a DXS-I; and \$105,000 for a DXS-III. Included in this price are two CPUs, a 2M-character disk, a tape unit and one communications line supporting up to 16 terminals. Modems for remote terminals, terminals and other communications equipment are extra.

TI is at P.O. Box 1444, 77001.

The Golden Age of Modem Buying?

COLLEGE PARK, Md. — Is this the "golden age" for modem and terminal buyers?

At least one of them — Dr. Pat Hagerty of the University of Maryland — thinks so; in some ways if not all.

It is often important for a user to be able to use a modem or terminal in his own facilities before he decides which one he wants to buy, Hagerty noted, because of differences in telephone lines and telephone systems in different parts of the country.

Today, he said, the modem and terminal business is so cut-throat that many suppliers will give a user a demonstration unit to try out before he decides.

But, he warned, "after there is a shakeup in the business and fewer firms are around, the vendors might not be so willing to let users try out different units."

CRTs Form Racing Form

TRUMBULL, Conn. — Triangle Publications, Inc. of Hightstown, N.J., is using CRT data terminals to produce the 100,000 copies of its Eastern Edition of the "Daily Racing Form," a journal of horse racing.

The Bunker Ramo 2206/17 CRTs are part of a word-processing system, which also includes a 1-billion byte data base containing detailed information on 90,000 horses racing at all major tracks.

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Datron Manual-Entry Card Unit Is Portable, Low-Speed

MOUNTAIN LAKES, N.J. — Datron Equipment has the Model 102A for users wanting a portable low-volume card reader/transmitter.

It is a low-speed transmission device accepting manually entered 80-column cards. Incorporated are features to allow the unit to be preset to accommodate variable- and fixed-data input.

The 102A can be purchased, rented or leased at rates starting at \$16.50/mo from 100 Rt. 46, 07046.

Novas Read PDP's Tapes

BELTSVILLE, Md. — "DEC Tapes" and classic Linc tapes can be read and written on Data General Novas equipped with a CO-500 Linc Tape and a CO-571N option, according to a spokesman for Computer Operations, Inc.

This capability permits interchanging 10-track format tapes between Novas and PDP series minicomputers.

The option is available on any Nova/Linc system for \$850 from 10774 Tucker St., 20705.

Imlac Enhances Graphics System

NEEDHAM, Mass. — Imlac Corp. is offering a floating point processor and a two-dimensional scaling, rotation, translation and windowing package as hardware options to its minicomputer-based interactive graphics system.

The floating point processor consists of an arithmetic processing unit and, optionally, 16 general-purpose floating point accumulators. It is designed to work with 32-bit floating point numbers. Cost of this option is around \$6,000.

The two-dimensional package provides for direct scaling, rotation, translation and windowing of displays under program control.

Package cost is \$4,200 from 150 A St., New England Industrial Center, 02194.

Multi-Port Offered PDP-15 Users

LEXINGTON, Mass. — A multi-port option for PDP-15 add-on core memory allows up to four "users" — processors, terminals, data acquisition devices, etc. — to share a block of memory on a hardware-defined basis, according to Dimensional Systems, Inc.

The multi-port option for DMS-15 add-on memory accepts memory address requests from various controllers and maps these addresses to a predetermined block of memory, the firm's spokesman said.

A typical 32K-byte DMS add-on with the four-port option costs around \$30,000, from 31 Hartwell Ave., 01776.

IBM 3270, 2260 Simulation

Satellite System Allows Networking

By Michael Weinstein
Of the CW Staff

CUPERTINO, Calif. — Four-Phase Systems, Inc. has an integrated system for users who want to unite a central facility with a network of subsystems.

The System IV/40 — which would act as the satellite — features a 72K-byte large-scale integration (LSI) processor with an integrated diskette or cartridge disk drive and an integrated communications controller.

Intended for applications needing as few as two video terminals, the system can be expanded to accommodate up to 16 video terminals and 16 printers.

When operated with the Data IV/70 Source Data Program, the unit combines the functions of key entry, verification and validation with communications and output capabilities.

It can process data with its own CPU or be used as an RJE (Remote Job Entry)

device, saving data for future processing at the central location.

When used in a real-time environment — e.g., data entry and retrieval from a central data base — the system's terminal characteristics and communications are compatible with both the IBM 3270 and 2260 Display Systems through software simulation, a spokesman said.

The 3270 Simulator Program provides IBM-compatible extensions for local format storage as well as store-and-forward capability to enable data entry to continue during periods of line failure or central CPU downtime, he added.

Programs for customized user applications can be developed under the Four-Phase Disk Operating System using either Cobol or Assembler.

The price for a three-terminal key-to-disk system is \$573/mo on a one-year lease. This includes three 1,152-character video displays and a 24K-byte processor

with integrated 2.5M-byte cartridge disk drive and bisynchronous communications controller. Additional terminals may be added for \$41/mo. A 132-column 30 char./sec printer and controller may be added to the system for \$120. Additional printers cost \$100/mo.

For simulation of the IBM 3270 Display System, an eight-terminal System IV/40 with diskette and 1,920-character dual-intensity displays rents for \$865/mo on a



System IV/40 acts as a satellite processor in a distributed processing network.

one-year lease. A similar 16-terminal system with 480-character displays leases for \$1,116.

For simulation of the IBM 2260 Display System, an eight-terminal System IV/40 with diskette and 960-character video displays rents for \$678/mo on a one-year lease, while a 16 terminal system leases for \$1,141.

First deliveries of System IV/40 are planned for the third quarter of 1973, from 10420 N. Tantau Ave., 95014.

HP Unveils 'Top-of-Line' Mini With Writable Control Store

CUPERTINO, Calif. — Hewlett-Packard has introduced the 2100S Microprogrammable Systems Computer as the top-of-the-line in its minicomputer series.

The basis of the system is the use of a Writable Control Store (WCS) enabling users to write their own instruction sets.

Users can store 256, 24-bit microinstructions on each of three WCS cards.

In conjunction with these cards users can have their own libraries of microprograms on disk. These programs can be transferred to the WCS cards as needed. After execution, the microcoding can be swapped with other microprograms on the disk, or left on the cards.

In this manner the user can alter the 2100 at any time, configuring for different functions — e.g., one time as a process control unit, the next as a communications processor.

Users wishing to retain microcode permanently in the central processor can have the instructions fused on Read Only Memory Chips by a feature called the Prom Writer.

This Programmable Read Only Memory Writer consists of one card temporarily inserted into a 2100S I/O slot and a small box in which the ROM chips are fused.

Software provided with the Prom unit enables the system operator to control the fusing with chips automatically verified and any missing bit re-fused.

The basic 2100S comes with a complement of 102 microinstructions and 86 basic machine language instructions.

The central processor has a cycle time of 196 nsec.

Basic configuration includes a 16K-word

memory, communications control channel, hardware floating point, crystal-controlled time base, two software-assignable direct memory access channels, memory protect, memory parity, power fail and extended arithmetic instructions.

The 2100S sells for \$16,000 and is available on a lease or rental basis. First deliveries are set for mid-1973.

360/22 Can Attach 2314/2319s Through Channel Enhancement

SHERMAN OAKS, Calif. — IBM 360/22 users can obtain a Selector Channel Enhancement to increase the data transmission rate enough to allow the attachment of 2314/2319-type disk drives and other relatively high-speed peripherals from International Systems Organization.

This enhancement capability is ideal for 360/22 users with a large file space requirement and nominal processing requirements, a spokesman for the firm asserted.

An enable/disable switch is incorporated into the design to return the processor to its normal operating state for maintenance and trouble-shooting.

No Maintenance Interference

Also, the components are interlocked so that removal of any one returns the processor to normal operation. These features will allow IBM or other prime maintenance organizations to perform their

maintenance functions without interference from added hardware, the firm said.

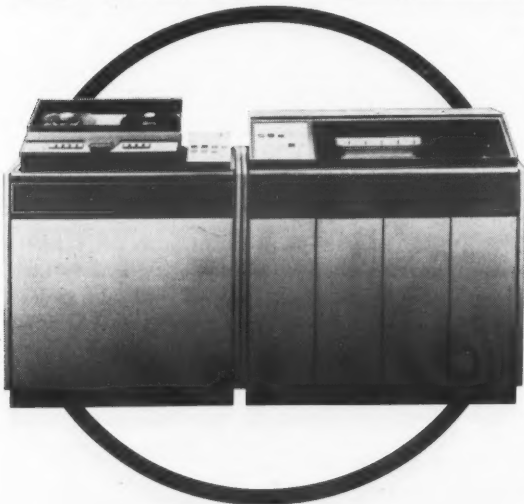
These capabilities overcome IBM's objections to foreign vendor modifications, the spokesman added.

Coupled with the availability of memory expansions to 65K bytes, the ability to attach 2314/2319 disk subsystems will give the 360/22 a longer user lifespan, according to International.

If the user wants to expand his 360/22 memory beyond IBM-supplied limits or replace IBM memory, a spokesman said, the disk attachment enhancement feature is compatible with a majority of the available memory expansions.

The installed purchase price of the 2022 High Speed Selector Channel is \$6,643 in the Continental U.S.

Lease/purchase plans are also available from 14724 Ventura Blvd., Suite 511, 91403.

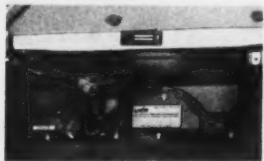


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OS Good, Applications Bad**Software Best, Worst of HIS, User Says**

By Michael Weinstein
Of the CW Staff

PROVIDENCE, R.I. — "Software is the best and worst aspect of our HIS 2050 system," said John Snodgrass of Balfour Co., a jewelry firm here.

To clarify this apparent contradiction, Snodgrass explained that the OS/2000 operating system provides all the capabilities expected, but the application software support from Honeywell has been a bit lacking.

In speaking about Honeywell as a supplier, Snodgrass felt the hardware maintenance was a

major plus.

"When we have a problem, they [Honeywell] are always there and we have not experienced very much down-time."

The operating system is running well with only slight problems in the job scheduling procedures. But many of these problems may be due to the slower peripherals attached to the central processor, he said.

"We had some slight problems earlier with OS/2000 as the early releases were all maintenance releases developed to clean up operation. But after these initial changes the system ran well," he said.

Applications Troubles

In the application area, Snodgrass said his firm does most of its own coding, but whenever Balfour has used HIS supplied programs troubles developed.

"We started to use a payroll application, but soon found it more expedient to take parts here and there and write portions ourselves," he stated.

"Another problem arose when programs did not work in the same manner as described in the technical manuals."

Balfour called in the branch office for assistance, but found there wasn't anyone there who had an adequate expertise with the packages, according to Snodgrass.

They were willing but in the end all the programs were sent to corporate headquarters in Massachusetts, he related. "It seems strange that they were not willing to send a person down here for a day instead of spending all that time up there. A few hours here would have been much more helpful."

Installation's History

Prior to the present installation of the 2050, Balfour had been

operating with an HIS 200 under OS/200.

In 1972, the firm wanted to upgrade, with the primary objective being the ability to run multi-job streams and the support of remote video display terminals to be placed throughout the company for on-line inventory order tracing.

With the current lease on the HIS 200 running out Balfour looked at both the HIS 2050 and the IBM 370/135.

The company decided to remain with Honeywell for several reasons. Peripherals would have had to be exchanged — at some cost — if a switch was made to IBM. Programs written for the current HIS system would also have had to be converted if the firm chose IBM.

Balfour felt Honeywell's OS/2000 was in many ways superior

"When we have a problem, they [Honeywell] are always there and we have not experienced very much down-time."

to IBM's proposed DOS for Balfour's applications, mainly because it would require less support.

It would also have been very costly to pay for schooling to retrain personnel if the switch was made, Snodgrass said.

Finally, on a cost basis the proposed HIS system was less expensive than the proposed IBM 370/135.

These reasons, coupled with a long and good working relation with Honeywell, decided the issue and in July of 1972 the 2050 was installed.

The present configuration includes the 2050 CPU with 196K memory, six tape drives, four disk subsystems with a total storage area of 72M characters, card equipment, printer and communications equipment to support the inventory order tracing terminals.

Problems Arise

One immediate problem following the upgrade was the speed of the newer CPU compared to the older peripherals. "We kept the peripherals we had been using on the older HIS 200 and found that throughput was suffering as they could not keep up," Snodgrass stated.

To counteract this bottleneck, Balfour is looking at the newer HIS 277 disk drives. "But, with the recentness of the release of the 277 disks and Dash/2000 — the disk operating system — we are waiting for these units to be fully field-tested," he added.

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Study on How French Is Spoken Promises Some Side Benefits

By Ken Shonk

Of the CW Staff

SANTA BARBARA, Calif. — Using a computer and 25 hours of secretly recorded conversations with 50 educated Frenchmen living in Paris as the data base, Andre Malecot is close to finding out just how French is actually spoken.

His study also has the goal of establishing correlations between different peoples, their emotional states and the way they use the language.

Some Interesting Correlations

In the seven-year study Malecot found such correlations among his sample as: older people tend to speak 20 syllables a minute slower than those younger; women speak slightly longer than men; the longer the sentence, the faster people tend to speak; and supervisory people speak slower than subordinates. In the

conversations with French doctors, engineers and other professionals only 4,000 words were used although topics ranged from automobiles to world politics.

A French-born phonetician and professor of French and Italian at the University of California, Malecot spent most of the study handcoding the two million bytes of information on 13,000 optical data sheets. The data sheets contained a phonetic transcription of the conversations, all possible subtleties of pronunciation and a large number of grammatical, psychological, intellectual and demographic factors.

The information was then fed into an IBM 1232 to establish the correlations.

Malecot said he believes that besides broadening the study of the phonetics of all languages the research can help in the accurate identification of people by their voices.

Court System Is Statewide Effort

DENVER — A computerized court system is scheduled to begin operation soon in this area and should be operating statewide by the end of 1975. Although many counties throughout the U.S. have similar systems, the Colorado project is one of the first statewide efforts.

The proposed system will handle, at first, the court calendar, indexing of cases and docketing, according to Nelson Howell, senior budget and fiscal analyst for the state's judicial department. Eventually the court system will tie into the law enforcement system.

It will also keep track of probation cases in an attempt to analyze the effectiveness of probation measures, Howell said. Fiscal, statistical and personnel records will also be a part of the system.

The judicial system is partly computerized now. Besides personnel and budget applications, the state has a comprehensive jury selection system that Howell said "makes the whole jury selection process practically untouched by human hands." The computer maintains the master file, picks potential jury members, sends out notices and pays the jurors, all with minimal manual intervention.

Howell explained many of the proposed applications will be handled on-line but high costs will prohibit a completely on-line system.

Colorado presently has a 144K IBM 370/135 and uses IBM's Basic Court System package for file maintenance and teleprocessing.

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Le Forum est une manifestation qui vous permet de rencontrer les responsables des entreprises, de discuter avec les experts, de voir les dernières nouveautés et de participer à des ateliers de travail.

L'EXPOSITION
L'Exposition est une manifestation qui vous permet de voir les dernières nouveautés, de discuter avec les experts et de participer à des ateliers de travail.

City	Dates
PARIS	2, 3, 4 MAI
BORDEAUX	7, 8, 9 MAI
MARSEILLE	15, 16, 17 MAI
LYON	22, 23, 24 MAI
STRASBOURG	28, 29, 30 MAI
BRUXELLES	5, 6, 7 JUIN

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Computerworld's French market Computer Caravan is a French show. Because it's being co-sponsored by the leading French Computer publications, *Zero-Un Informatique*. With the leadership of *Zero-Un*'s widely respected monthly magazine and weekly newspaper, French market computer users will know they're getting an Exposition that is uniquely theirs. We'll be conducting The Caravan in local hotels, and orienting the user Forums to accommodate the needs of French market users.

This combination of French control, French publicity and user-orientation will draw thousands of important EDP buying influences as we travel to six cities in 2 countries. And these people are part of one of the most rapidly growing computer markets in the world. Here are some of the figures, according to a recent survey by International Data Corporation:

Overall 1971 EDP Expenditures \$1.48 billion
Projected increase for 1972 8.1% (1.6 billion)
Projected increase for 1973 14.5% (1.83 billion)

Submarket projections:

Data Entry equipment (especially key-to-tape, key-to-disc) is projected for a 28% increase in 1973.

Data Communications Terminals and Control Equipment expenditures are expected to go up 40% in 1973 to a total over \$27 million.

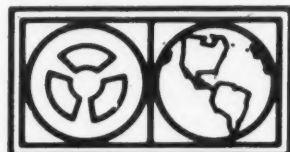
Independent Peripheral Equipment expenditures are expected to increase markedly in 1973, partially as a result of newly expanded marketing operations.

If you're marketing in Europe — or if you want to be — "La Caravane" is a sales tool you shouldn't pass up. If you'd like the details, just send in the coupon or call Neal Wilder at (617) 332-5606.

French Market Caravan Schedule

Dates	City	Site
May 2-4	Paris	Hotel PLM Saint Jacques
May 7-9	Bordeaux	Palais Des Expositions
May 15-17	Marseille	Palais Des Congres
May 22-24	Lyon	Palais Des Congres
May 28-30	Strasbourg	Palais Des Expositions
June 5-7	Brussels	Palais Rogier

Package Price: \$9000



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Please send me more details — including market facts and brochure — on The European Computer Caravan's which I have checked.

- ☐ French Market Caravan
☐ English Market Caravan
☐ German Market Caravan

(May 2-June 7)
(Sept. 4-Oct. 18, 7 cities)
(Oct. 30-Nov. 30, 5 cities)

Name _____

Title _____

Company _____

Address _____

Zip _____

Mini...evolution?

GAITHERSBURG, Md. — "The Mini-computer — Evolution or Revolution?" will be the topic of the keynote address at an April 4 symposium here sponsored jointly by the National Bureau of Standards and the IEEE Computer Society.

The symposium will examine mini-computer trends and applications with a morning and afternoon session at which papers will be presented. "The Minicomputer Is Another Maverick at Ford" is the title of a paper by H.J. Kuschnerus.

The keynote address, to be given by George Vosatka, president of Varian Data Machines, will focus on the causes and effects of expanding mini-computer applications and will project the impact of present trends such as the use of intelligent terminals and interconnection of data networks.

Registration costs \$12 for members and \$15 for non-members. The IEEE/CS can be reached through Box 639, Silver Spring, Md. 20901.

Univac Users 'Exchange Know-How'

NEW ORLEANS — "Exchanging Know-How" is the theme of the spring meeting of the Univac Users Association here April 3-5. Sessions focusing on applications in the fields of education, finance, government, management and personnel will be supplemented by sessions on each Univac machine.

One of the highlights will be a presentation of the new Program Library Interchange through which users can exchange without cost programs written by members.

In the management area, one session will deal with on-line administrative systems at the University of Maryland. In the session on "Evaluating the Areas Where the Dollars Are: Compilers and Multiprogramming Potential," John L. Johnson of Data Technology Industries, Inc. and James Stein of Navy Ships Parts Control Center plan to show comparative figures as examples of how the DP manager can evaluate a Cobol compiler and also the effectiveness of a machine's multiprogramming capabilities.

In "Effective Systems Planning" R.L. Mason of the Transformer Division of Westinghouse Electric Corp. will delve

Societies / User Groups

into why some systems' plans are realized and others are not.

For users interested in educational applications, members of the Chicago Board of Education will explain the use of a

computer-assisted instruction system in elementary schools in deprived areas.

The sessions relating to government applications feature a discussion on data base organization led by representatives from the University of Maryland, and an on-line system for court administration being installed in El Paso County.

Further information on the conference at the Fairmont-Roosevelt Hotel is available from C.J. Rachel, executive secretary, Univac Users Association, P.O. Box 500, Blue Bell, Pa. 19422.

Sigucc to Discuss Serving Users

CHICAGO — The Special Interest Group on University Computing Centers (Sigucc) of the Association for Computing Machinery will hold a user services conference here, April 3-5.

Emphasis will be on the exchange of information and experience on practical, applied computer technology.

Most sessions will consist of a small panel of experienced computing center personnel, but open discussions will be the primary emphasis.

Tuesday's sessions include user consulting, documentation, accounting services for users, personnel selection and job submission and retrieval.

The sessions on Wednesday and Thursday concentrate on various aspects of services highlighting user viewpoints, education and priorities.

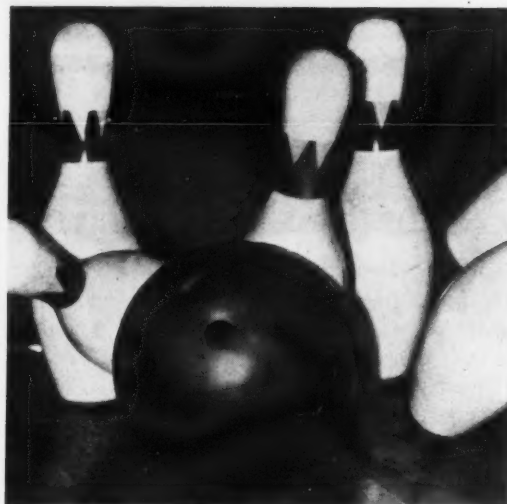
"The Special Problems of Small Colleges" will be discussed by Fred Weingarten of the National Science Foundation.

The cost of the conference, to be held at the Playboy Towers Hotel, is \$50 for Sigucc or ACM members and \$65 for non-members. Registrations should be sent to Fred Harris, ACM-Sigucc User Services Conference, 5641 Ingleside Ave., Chicago, Ill. 60637. Further information on the conference may be obtained from the conference's general chairman, Susan H. Kolasa at the School of Law, Stanford University, Stanford, Calif. 94305.

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For 16 service-sensitive telephone companies, Sanders terminal-system hardware and software are reducing mountains of company and customer records to manageable molehills. Sanders systems are serving over 300 U.S. businesses and institutions in more than 30 market categories.



For a data-deluged maker of bowling equipment and scores of other products, Sanders terminal systems are helping to process orders, check inventories, meet payrolls and update records with maximum efficiency. Sanders produces the most complete line of data terminals and support peripherals available today. Give us your terminal-system problem... and see how Sanders **Terminalogy** solves it. Contact your local Sanders office or our National Sales Manager at 603-885-3727.



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Corporate Headquarters

Seminar to Examine DP Center Security

CHICAGO — Managing the Security of Data Processing, a two-day seminar being presented here and in Dallas by the American Management Association, is designed to increase awareness of various precautions needed to protect a data center.

The course will treat environmental factors, disaster recovery planning, protection of vital data as well as the new role of EDP auditing.

The course, to be held March 28-30 at the AMA Management Center here, and April 4-6 at the Hotel Adolphus, Dallas, costs \$250 for members and \$280 for non-members.

The AMA is at 135 W. 50th St., New York, 10020.

Calendar

April 10-14, Detroit — 22nd Annual Conference and Exposition of the National Microfilm Association. Contact: National Microfilm Association, Suite 1101, 8728 Colesville Road, Silver Spring, Md. 20910.

April 16-19, New Orleans — Association for Educational Data Systems (AEDS) 11th Annual Convention. Contact: P.L. McCreary, Jr., Bossier Parish School Board, 2500 Viking Drive, Bossier City, La. 71010.

April 26-27, Bloomington, Minn. — American Society for Information Science (Asis) Regional Conference. Contact: Jack King, Library, Hamline University, St. Paul, Minn. 55101.

April 29-May 2, Sarasota, Fla. — Annual MIS Conference, sponsored by AMF, Inc. Contact: AMF Inc. World Headquarters, White Plains, N.Y. 10604.

April 30, Saddlebrook, N.J. — User Seminar on Automatic Testing, sponsored by Instrumentation Engineering, Inc. Contact: Kathleen McMillan, Instrumentation Engineering, Inc., 769 Susquehanna Ave., Franklin Lakes, N.J.

Computerworld presents its new sister:

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"Shukan Computer" means "Computer Weekly" in English. In Japan, it means a whole new way to communicate with the world's most rapidly growing computer market.

As a joint venture of Computerworld, Inc., and Dempa Publications, Inc., *Shukan Computer* will provide the only newsworthy for the Japanese computer community. Like its sister, *Computerworld*, *Shukan Computer* will cover the latest developments in all aspects of the computer industry; including hardware, software, services, application techniques and industry trends.



Hideo Hirayama, President of Dempa Computerworld Company and Patrick McGovern, President of Computerworld, Inc. look at the first copy of *Shukan Computer*.

Dempa Publications is the leading Japanese electronics publisher.

Dempa publications is currently the leading Japanese publisher of information services on electronics, including *Dempa Shinnbun*, the 200,000 circulation daily newspaper of electronics. Dempa maintains twenty-five editorial offices throughout Japan, the U.S. and Europe, which, along with *Computerworld's* editorial staff and correspondents, will provide the largest newsgathering organization of its kind in the world.



The Staff of Dempa Computerworld Inc.



Dempa Computerworld Inc. will do more than publish.

The new company set up to publish *Shukan Computer* is called Dempa Computerworld, Inc., and it will become involved in a variety of communications activities. It will conduct surveys on the Japanese computer market, hold seminars on new computer equipment and techniques, and, in early 1974, plans to run a "Computer Caravan" Forum and Exposition. Similar to the U.S. Caravan, the Japanese Caravan is tentatively scheduled for five of Japan's largest cities. Right now, *Computerworld's* U.S. and European Caravans are scheduled for 28 cities in 1973, and a total attendance of more than 85,000 professional visitors is expected.

Japanese computer market large and growing.

Right now, Japan is the largest single-country computer market outside the U.S. As pointed out by *Computerworld's* President, Patrick J. McGovern, "There are now over 15,000 computers installed in Japan, and the number is growing at over 25% per year. This growth and the current liberalizations of Japanese import policy on computer equipment makes Japan an especially attractive market for computer product and service marketers headquartered in the U.S. and Europe."

The Japan Ministry of International Trade and Industry indicates that by the end of 1975 there will be 38,000 computers worth over \$12 billion in Japan. There will also be very rapid growth in the use of peripherals and terminals, and services and contract software, providing almost unlimited business opportunities.

Shukan Computer's Circulation starts at 35,000

Initial circulation of *Shukan Computer* is guaranteed at 35,000, which provides in-depth coverage of computer users and industry personnel. Based on IDC data file lists and the resource lists of Dempa, circulation is divided about 80% to end-users and 20% to the computer industry. Circulation development methods will be the same as those which gave *Computerworld* the highest paid circulation in its field in less than four years.

Advertising in Shukan Computer is easier than it looks.

Advertising sales for *Shukan Computer* will be handled in the United States by Computerworld Representatives. Rates are reasonable, based on a CPM of \$35 (at current conversion levels—All rates are in Yen, and are estimated in dollars for convenience only). Full-page units are 9 1/2" x 14 1/2". Smaller units are available.

Also, *Shukan Computer* will provide translation services and aid in the establishment of marketing channels for companies new to the Japanese market.



Don't you always celebrate a birth with a cigar?

Shukan Computer hopes for best of both.

As Pat McGovern puts it, "*Shukan Computer* will combine some of the best features of *Computerworld* with some of the proven successful techniques of Dempa Publications, to produce a publication that is unique in Japanese trade publishing. We expect it to be a great success!"



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Here's just some of what's happening at the 1973 Computer Users' Forums.

And it'll be happening soon in a city near you:

The Computer Caravan/73 is on its way. And the Users and Panelists attending Forums in the beginning of our tour have exchanged a wealth of information on a wide range of topics. Information you can't get in books. Experience-based information from the people who've been through it. User talking to user in shirtsleeve workshops, panel discussions and seminars. It's a unique exchange of information that will benefit you and your company.

FORUM TOPICS

Day 1—Data Entry—Including keypunch replacement (shared Processor), Intelligent Terminals, OCR, and Direct (on-line) Data Entry.

Day 2—Communications—Including Data Transmission (dial-up and leased lines/broadband) and Equipment Selection (communications processors and control equipment).

Day 3—Installation Management—Including Personnel recruitment and training, Programming management and independent peripherals (including memories).

OPEN SESSIONS

Each afternoon features a new, open session for all those who wish to attend. A different subject will be opened up each day at 2:30 for discussion and controversy.

Day 1—Data Communications Planning
Day 2—Software Evaluation Panel
Day 3—Small Systems Panel

PANELISTS

Next stop: San Francisco. And here are some of the panelists who will be there: Hector Gomez, State Compensation & Insurance Fund; Kenneth Iversen, Amfac; Stu Proffitt, Standard Oil of California; Steve Tiller, Del Monte Corp.; John Nackerud, Transamerica; Roger Kovach, University of California (Berkeley).

Send in your reservation form now, and your space at the 1973 Computer Users' Forums will be reserved.

The Computer Caravan/73

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Computer Users' Forum Registration

Name _____
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State _____ Zip _____

1. Please circle one number in each category.

(This information is necessary to provide a better forum for you.)

YOUR INDUSTRY

- 01 Mining/Construction/Oil & Refin.
02 Manufacturing—Computer or data system hardware, peripherals/other associated mechanical devices
03 Manufacturing (other)
04 Utilities/Comm. Sys./Transport.
05 Wholesale/Retail

- 06 Finance/Insurance/Real Estate
07 DP Serv. Bureaus/Software/Plann.
08 Business Services (except DP)
09 Education/Medical/Legal
10 Federal, State and Local Govt.
12 Communications/Printing/Publ.
13 Other: _____

YOUR FUNCTION

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02 Data Processing & Other Operational Management
03 Data Processing Professional Staff
04 Consultant

- 05 Lawyer/Accountant
06 Engineering—Mgmt./Scientific/R&D
07 Sales/Marketing/Account Exec.
08 Librarian/Educator
09 Other: _____

2. Please check the appropriate city:

Atlanta	March 13-15 (Tues, Wed, Thur)	Regency-Hyatt House
Houston	March 20-22 (Tues, Wed, Thur)	Hyatt-Regency Houston
Anaheim	March 27-29 (Tues, Wed, Thur)	Disneyland Hotel
San Francisco	April 3-5 (Tues, Wed, Thur)	Civic Auditorium (Forums & Exposition) Del Webb Towne House (Hotel Rooms) Municipal Auditorium (Forums & Exposition) Muehlebach (Hotel Rooms)
Kansas City, Mo.	April 11-13 (Wed, Thur, Fri)	Conrad Hilton Hotel
Chicago	April 17-19 (Tues, Wed, Thur)	Convention Center (Forums & Exposition)
Cleveland	April 24-26 (Tues, Wed, Thur)	Sheraton Cleveland (Hotel Rooms)

3. Check the day(s) you will attend the Forums.

- ☐ Day 1—Data Entry—9 am-2:30 pm
☐ Day 2—Data Communications—9 am-2:30 pm
☐ Day 3—Installation Management—9 am-2:30 pm

NOTE: Afternoon Sessions are open to all—free of charge.

4. Your enclosed check will cover all workshop materials, luncheon, Forum admission and admission to the Exposition Hall (make checks payable to "The Computer Caravan")

- ☐ One Day—\$25.00 ☐ Two Days—\$50.00
☐ Three Days—\$75.00

All Tickets will be held in your name at the door

Exposition only tickets (no forums or luncheon) are \$5.00 and should be purchased at the door (ticket good for all three days).

Return this form to:

Frani Blackler
Computer Users' Forum
797 Washington Street
Newton, Mass. 02160

For additional registrations, copy this form—or write for extra copies.



★ The Non-IBM World ★

March 28, 1973

SPECIAL REPORT — Page 29

Increased Quality

Reduced Costs

Success of Non-IBM Sources Is a Boon to All Users

"There are two types of people: those who divide people into two types and those who don't." — John Barth

Most people in the DP world fall into the former class and divide the world between IBM and "the others."

While this division may become a partisan issue with cries of monopoly, unfair marketing practices, charges and counter-charges argued by lawyers, economists and philosophers, the real outcome will probably be decided by the users with those companies which are able to offer viable products and services attracting the more loyal customer base.

But even though the problem of competition is far from being resolved, it is clear that the cynics who wrote of the computer industry as "Snow White and the Seven Dwarfs" during the 1960s were too hasty.

As we move into the 1970s, Snow White is having trouble with detractors who call her Snow Grey (her virtue in question through a morals charge before the Justice Department).

While two of the dwarfs have died, no epidemic ensued among their users and the "others" are quietly winning an increasing number of loyal users by offering added or specialized services and in some cases zeroing in on one segment of the computer user market.

And Then There Were Five

Of the seven original dwarfs — CDC, Burroughs, NCR, RCA, Honeywell, Univac and GE — RCA passed away from a bizarre case of management syndrome that will provide Harvard Business School students a theme for years to come.

The other departed dwarf, GE, apparently decided its real love and/or money lay in running a time-sharing network and building the better light bulb.

The other five have prospered by getting their product lines in order and in some cases staking out a portion of the computer user market. And all except NCR showed record, or near record, earnings for the past fiscal year.

Even if it is true that there will be more tombstones in the DP cemetery, past history shows there is little danger to the user.

Univac's marked success with former RCA customers and general contentment among past GE users under Honeywell has shown that even if a company fails or abandons the computer field, the users are taken in and pampered by one of the survivors and in nearly all cases are better

off than before.

And More Heard the News

The success of the remaining five dwarfs has lured other companies to enter the computer systems market through the following rationale.

- It appears the recession is over and potential users are now willing to invest more freely.

- The Nixon economy tends to favor companies that reinvest profits in growth as opposed to keeping money in the form of dividends.

- Non-IBM suppliers have shown they can compete by offering a differing technology or by directing efforts to a small defined segment of the market.

For example, major releases of "virtual memory," key-to-floppy disk and dual-

processor systems had been offered by other sources long before IBM gave these techniques its blessing.

Additionally, IBM is so large that a company such as NCR can define a segment of the computer user community — e.g., users moving up from cash register equipment to their first computer — and develop this market with no designs on the large or sophisticated scientific user.

To put the issue into proper context it should be noted that not all computer acquisitions come down to a choice between IBM and another company, but the aura of the corporate giant is so large and pervasive it forms the benchmark others must try to exceed.

Users will benefit from this overall competition as vendors offer systems and

services beyond comparable IBM offerings, sacrificing large profits to develop a stable and loyal customer base.

But while the sacrifices are great the stakes are high; many economists feel that the computer market is one of the world's fastest growing industries. Those companies that survive the growth period will be paid well for their sacrifices.

As a note of caution, these same experts feel it is not a game that will allow an unlimited number of players. Rather it is felt the industry will even out much the same as the auto industry with three or four major suppliers and a few others supplying special interest groups.

For the present, no one is predicting anything but continued good health for non-IBM manufacturers in the foreseeable future.

Users Who Should Know Grade Vendors

By Michael Weinstein
and Toni Wiseman
Of the CW Staff

Superior hardware capabilities and cost/performance from non-IBM sources or good vendor software and organizational support from IBM? This is the trade-off many users feel they must make when obtaining computer systems, according to a recent *Computerworld* survey.

Computerworld interviewed users of seven different computer systems: Burroughs, Control Data, Digital Equipment (System 10s only), Honeywell, NCR, Univac and Xerox. In most cases about 20 users of each system were surveyed.

It was not the intent of the survey to obtain technical evaluation of the systems, but rather to determine general user opinions about the vendors, their equipment, software and services.

Burroughs/User Relations

Burroughs' greatest strength appeared to be its relationship with its users, many of whom expressed a genuine liking for their supplier.

"What I like most about them (Burroughs) is their non-arrogance," one user stated. "When I have a problem, they are really interested in helping me and I can usually get to a source who can solve my problems."

Another user echoed this feeling by contrasting his experiences with IBM. "When I was with IBM I felt as though I

- Burroughs: 'Good User Relations'
- CDC: 'Super Computer Power'
- DEC: 'Superior Cost/Performance'
- Honeywell: 'Excellent Support'
- NCR: 'Most Hardware for the Money'
- Univac: 'Best Operating System'
- Xerox: 'Good System, Low Visibility'

was just an account number and if I did not like something it was too bad. With Burroughs I feel they want my business and have a concern for my problems."

Another plus voiced by Burroughs users was the hardware/software mix of their systems. Users felt the machines were designed with the operating software in mind, as opposed to designing the hardware first and then making the software fit.

But if users were high in their praise of the operating software, they were low in their esteem for applications software and software support, except in the banking area.

In fact, Burroughs users were typical of all users in the non-IBM world in that they did not have access to large libraries of applications, whereas IBM users do have this resource.

CDC Power

Control Data ranked high with its users in the power of its computers and in certain application areas where they have built specially-tailored systems.

Thus, the majority of CDC users were either large institutions with a great deal of internal expertise who used the machines as large number crunchers or users in the applications areas where CDC had provided everything needed.

There were few users in between — general EDP users — compared to the other suppliers. Logically then, the greatest problems voiced were not in the area

of software but in the areas of organizational and hardware support.

Most critical were the large users who felt that on-site engineers were not as competent as they should be.

DEC Cost/Performance

Digital Equipment users were very pleased with the capabilities of their System 10s in relation to the cost.

One user who had benchmarked a DEC System 10 against an IBM 370/155 felt the System 10 was a vastly superior machine at a fraction of the cost.

But he hastened to add, "the first peripheral a System 10 user should obtain is a very competent programmer/analyst." He felt the DEC machine was very powerful but it was incumbent on the user to determine how to use this power. "but they become disinterested if they do not find the problem 'stimulating.'"

This opinion was reasserted by other users who felt DEC was weak in applications software and follow-up support. They felt the computer was superior and that DEC assumed the user was superior.

Of all the users surveyed, DEC users felt they probably received the least hand-holding.

Honeywell Happiness

Honeywell users, on the other hand, were quite happy with the support they received. Honeywell users were the only ones questioned who felt they received

(Continued on Page 32)

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TELEX subsystems offer self-contained micro-programmed diagnostics. This means

that potential and actual failures can be quickly and accurately isolated and the information necessary to correct errors is provided so that interruption is minimized. With our 6360 memory subsystem, for example—when multiple basic storage modules are employed—an error condition can be diagnosed off-line in one unit while the remainder of the memory is still available to the user.

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Cost/Performance or Software/Support?

To be or not to be with IBM, that is the question. Whether it is nobler in mind to pay the extra money and get the ever-present and reassuring IBM support, or to brazenly go forth and, while paying less, have more of the burden for day to day operations fall on the user's shoulders.

This seems to be the basic trade-off of the non-IBM user.

Initial cost saving is a major reason given by many users for choosing non-IBM computer systems. But in saving money on equipment costs, users have found they had to spend time and money to develop a greater in-house expertise.

The question arises then, whether they would have been better off under IBM's protective fold. Despite complaints about software most non-

IBMers respond that they would not be better off.

One user voiced a popular view when he said users had to be responsible to themselves and that no vendor was totally dedicated to providing software.

Analysis

"A basic truth of all computer system manufacturers is that they are in the business of building and selling hardware," he said. While they have nothing against making a little on the side from selling software, their major emphasis is on developing programs needed for direct support of their systems.

"When I was an IBM employee, there

was a document that had to be put together by anyone proposing a new program product," related the user. "After a brief introduction as to what the software would do, the initiator had to specify — in detail — what hardware products it would help to sell."

Even IBM had limits on the number of development projects it could support, he continued. It was understood that priority would go to the utility programs, operating systems, compilers and on-line terminals operations close to the heart of equipment operations.

Applications Expertise

The real difference between the IBM user and the non-IBM user is not so much in his vendor-supplied software, but in his ability to access someone who has

experience in his particular application problems.

If the IBM user has a problem in some remote area, it is probable that somewhere an IBM expert exists who has spent time on this application.

However, the user will still have to pay extra for this expert to come and solve the problem.

The other danger in the outside expert is that after he has solved the problem he leaves, and problems that ensue are many times faced by an internal staff that does not understand the problem enough to effect a solution.

While the non-IBM user does not have access to such large amounts of expertise this can work to his benefit. He simply cannot afford to run a "sloppy" installation.

Runs 19 Concurrent Jobs

Burroughs B3500 System Gives User 'Time to Spare'

GREENSBORO, N.C. — "After 15 years with IBM, it's hard to imagine having a computer that allows us to go home at the end of the day with all our work done," said Dick Saunders, manager of programming for Cone Mills.

In discussing his last three years as a Burroughs user, he said his company "never had it so good."

Cone Mills is a textile company with standard data processing applications such as inventory, payroll, etc.

Until 1969, Cone Mills followed a standard IBM path from the 650 through the 1400 series and on to the 360s.

In 1969, it was running a 360/30 with 65K and a 360/40 with 128K.

At that time the firm decided to install an order entry system, but the current system was too small to support such an application.

IBM's suggestion was to upgrade to a 360/65 with 512K bytes of memory. But because of the considerable money involved and the need to move from DOS to OS, the firm decided to shop around before coming to any definite decision.

Out of a preliminary survey came three

"We used to have a staff of 15 programmers and they were not enough; now we only need seven."

possible vendors: IBM, RCA and Burroughs.

A primary consideration was the ability of the chosen machine to run multijob streams simultaneously.

"We had many very small applications so the more we could process, the better we could serve our internal users," stated Saunders.

To determine which system could best meet their needs, Saunders developed a benchmark to run on each proposed system.

The benchmark results showed Burroughs and RCA were very close in terms of throughput capability and cost.

To add another dimension to the study, Saunders began talking to other users with surprising results.

"In all the time we called users, we never found an unhappy Burroughs user. Sure there were some with problems but none were discontent with the fact that they used Burroughs equipment," he said.

Added to the user responses, an inside study determined the Burroughs operating system software was superior to other offerings.

In 1970, the Burroughs system was installed. Built around a B3500 with 240K bytes, the configuration included six 1,600 byte/in. tape drives, a 100M-byte on-line disk subsystem, related printers and card equipment.

Saunders and his staff converted over 1000 programs to the new machines. Using these programs, they were able to run 19 jobs concurrently on the 262K byte B3500. Previously, it took more

than three shifts for the 360/30 and 360/40 to do the same work.

"In the days before the B3500, we just never seemed to get done. All the jobs were late. With the new machine I was going home on time and we didn't need the extra third shift," Saunders stated.

"Soon we started looking for additional services we could provide and started going into data communications," he added.

This operation meant the replacement

of a remote 360/20 with an RJE unit and setting up other remote terminals.

The operation of these communications functions concurrently with the data processing jobs has had no effect on throughput speeds, according to Saunders.

Another advantage of the B3500 is that the firm needs fewer programmers, he explained.

"We used to have a staff of 15 programmers and they were not enough; now we only need seven."

Users Who Know Grade Vendors

(Continued from Page 29)

better support from day to day than their IBM cousins.

More than any other class of user, the HIS user had a feeling of IBM presence and contrasted his service to IBM's.

Time and again the determining factor for going with Honeywell was a cost advantage with no reduction in service.

One large complaint from Honeywell users was in the area of application software. But users indicated they saw a marked improvement in this area over the past year.

"Honeywell has come to realize that if they are going to compete across the board with IBM they must supply improved software," one user noted.

"They are working in this area, with marked improvements in the operating systems and new additions to application packages," he continued.

Users Split on Univac

Univac users were split on the quality of service, with some praising their service as above and beyond anything expected and others feeling they had been left out on a limb.

But more than any other user, the Univac user felt he had the best operating software — especially in Exec 8. This operating system capability was the reason cited by many users for being in the Univac fold.

NCR had the distinction of receiving the highest praise for hardware/cost capabilities and the most chastisement for software and support.

This disparity approaches a love-hate relationship among many users who suffered in the beginning to get their installations operating. Once they overcame problems, however, NCR users were generally very pleased with the operation of their systems.

The consensus of opinion is that NCR produces good hardware; if they would only write manuals and provide software support, they would be the best.

Xerox was the sleeper of the group. Users who had taken the effort to benchmark the Sigma line highly praised the computer's capabilities.

But Xerox did not appear to have a uniform approach to support from region to region.



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Support-Wide Reliability an Impetus

Eight-Month Study Brings Town to Honeywell Lease

By Toni Wiseman
Of the CW Staff

WELLESLEY, Mass. — In order to keep up with expanding demands on its computer facilities, this town is leasing a Honeywell Model 2020 system.

The Honeywell system replaces an IBM 360/20 and major reasons for the change include going to disk storage to replace the outdated card system and upgrading to a Planned Programming Budgeting System (PPBS), according to James Kirwin, data processing supervisor for the town.

The decision to go to Honeywell was made by a committee of Wellesley citizens with DP backgrounds, based on an eight month study of the computer market. Other systems considered were NCR, Burroughs and Univac.

"We chose Honeywell's system because it will enable us to expand our data processing services to the town, and will

also provide greater efficiency in using current programs and increase the number of new applications," Kirwin said.

Many of these new applications center around the PPBS application which Kirwin described as "a budget control type idea which goes on historical information."

Card Environment Limited

"A card environment is very limited as far as statistical analysis and with the 2020 we can do more statistical investigation and analysis for the planning board, school department, DPW, etc.," Kirwin said.

The new system, according to Kirwin, will enable the town to do major redistributing for schools, voters and census information, which was impossible on the older system.

Kirwin listed inventory service for the town's 14 schools and a complete range

of data storage and analysis, such as maintenance schedules and average breakdown costs for the DPW and other applications as the "new flexibility of the 2020" will allow them to undertake.

"And with Honeywell we can have these expanded capabilities for only \$400/mo more than we were paying before," Kirwin stated. "In comparison with other vendors," he continued, "I don't think their reliability, support-wise, was as good as Honeywell."

And others with the support were "extremely expensive for the same type of equipment," he added.

The HIS 2020 system includes 32K of memory, a 24K increase over the former system. It also has a 450 line/min printer, card reader and card punch.

Disk storage of 9.2K characters of information will replace the punch-card storage system.

Wellesley's DP department consists of

an operator, two keypunch girls and Kirwin, who does all the programming. All processing is done at one location since, as yet, there are no outside terminals.

In all, they run some 200 programs, covering the gamut of administrative functions from payroll processing and utility bills, to real estate taxes and encumbrance accounting.

The system also processes grades and attendance records for the school department. "We hope to expand our services to include student scheduling by 1974," Kirwin said, "but for that we'll use a federally subscribed programming package."

So far, the system is operating on only a one-shift basis, but Kirwin has many expansion plans for the future. "We hope to get more involved with budget analysis, and planning the budgeting system, for one thing," he stated.

Asked about the possibility of sharing DP programs with other neighboring townships, Kirwin said, "We're not doing anything like that at the present time, but I'm not opposed to the idea. It's something we might consider in the future."

Early Impression From Copier Maker Wins Over DP User

By Dan Puccio

Special to Computerworld

DORCHESTER, Mass. — The Xerox people don't know it, but they began to sell Jordan Dennis Co. a Xerox 530 computer the day they converted its Xerox 914 copier to the 1000 version.

Xerox modified the copier at its own expense simply to improve the speed and clarity of the copier.

It was a surprise and gave Jordan Dennis a great deal of confidence in Xerox.

Later, when the 530 was announced, the wholesale firm was in the market for a multipurpose computer that could meet a lot of requirements. Its unique capability and expandable modular design was tailor-made for the newly formed Return Data Division.

Its multiuse foreground/background capabilities will enable the firm to perform the combination of commercial and/or scientific data manipulations natural to the Return Data Innerplex procedures. It will enable Jordan Dennis to move ahead with its plans to implement new ideas in the field of postal sciences and related material communications technology.

The system will initially manage a data base of some 4.5 million records comprised of individual names and addresses controlled in a multiplicity of categories.

The initial configuration now on order can select, sort, tabulate, mix and match records — using a 50M byte disk system and dual magnetic tape drives — while simultaneously printing text or numerical records. The two line printers to be used with the system print 144,000 record/hr.

Acquisition of the system will provide the Return Data Division with the ability to mix words and numbers into an infinite variety of variables.

The upper and lower case capability will be used to generate large volumes of text material for automated reproduction. The firm expects to use this capability in a number of ways in connection with direct marketing analysis and related communications materials.

Main memory and disk capacity will be expanded via the modular assembly technique as more records are put into the data base. The present 4.5 million records cover primarily the New England area.

Consumer data covering all cities and towns in the U.S., approximating 55 million records, will ultimately be merged and integrated into the system.

Dan Puccio is president of Jordan Dennis Co., Dorchester, Mass.

Our
April
25th
Supplement.

Data Communications

Probably no part of Electronic Data Processing systems requires such extensive planning as a communications network. Usually two to three years is required to make sure the resulting system is successful. And if the planning is inadequate, the results can be disastrous.

Computerworld's communications specialist, Ron Frank, takes a close look at this very complicated area in our April 25 supplement. It will include information on how to go about configuring a data communications network that will solve your particular problems. We'll describe some successful communications networks and discuss the utility of various kinds of equipment. When we put it all together, you'll have an excellent overview of this increasingly important EDP tool.

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Replaces 360/50s

User Cuts Cost, Increases Capabilities With DEC-10

By R.G. Ellis

Special to Computerworld

PITTSBURGH — Caught up in a wave of cost cutting, reorientation and restructuring characteristic of university computer centers across the country, the University of Pittsburgh was forced to replace its IBM 360/50s.

Based on all the benchmarks, the university determined that the base cost for a comparably configured Digital Equipment Corp. PDP-10 system was about 80% of a 360/50, and yet the processor was twice as fast.

Changing to DEC equipment represented a major change for the computer center at the university. Originally founded in 1956, it grew in much the same way as many university centers did through the 1960s, with a succession of IBM equipment — the 650, 7070, 7090 and 360/50s.

But in the late 1960s and early 1970s the computer center was forced to realign its operation in the light of limited funds.

In 1970 it was decided that the computer center was to become more businesslike in its operation, leaving developments which had no obvious benefit to the users to other research-oriented departments.

Setting the Goals

After an examination of the computer capacity on hand it became clear that even the gross amount of power of IBM 360/50s was inadequate to meet demands.

Long turnaround times and a large job backlog were the order of the day. It was not uncommon to have a 100-hour CPU backlog in the batch machine for long periods of time.

One goal, therefore, was to increase the total processing capacity by a minimum of 100%.

This increase could be accomplished by speeding up the CPU in the batch IBM 360 system, but not in the companion time-sharing system.

If other vendors were to be considered, however, the increase could be accomplished by methods other than simply speeding up the CPU. Capacity increase could involve the file-handling structure, multiprogramming techniques, printing speeds and operating systems.

Along with the capacity problem, the center had several recognized operational problems due to its three essentially different computer systems — large- and small-scale batch, remote and local and interactive time-sharing.

Thus, a second goal was to find equipment that could combine all types of usage into a common system.

Supporting the Users

Given the many users in diverse locations who used the center, a third goal

was an improvement of services.

These services included the submission and retrieval of work, user consultation, dissemination and promulgation of information and adequate user work space.

Since nothing is static, any system chosen had to provide for future growth with systems which have extensive expansion potential without reprogramming.

Finally, this proposed system had to keep expenditures at or below the 1970-71 fiscal year level.

Digital Equipment offered a PDP-10 which had four times the capacity of the 360/50 — used in the time-sharing mode — but which cost 30% less.

Its relation to the 360/50 batch machine was difficult to determine even though it was clear that the central processor speed was twice that of the Model 50, with the exception of double-precision arithmetic which was not a hardware feature on the PDP-10.

In terms of a common system, the

PDP-10 was the best working time-sharing system investigated, but it also had one of the most primitive batch-processing systems.

Both were working in the same machine environment, however, using the same command language, compilers and documentation.

Multiprocessor System

Although not implemented at the time, DEC was willing to commit contractually to a multiprocessor system. In addition, it had a prototype successor processor — the KI10 — that was going to be announced shortly, which was approximately twice as fast as the current model and had the double-precision arithmetic feature not available on the PDP-10.

The new machine was modularly expandable with a variety of peripherals and memory to 4M words.

Probably the strongest factor in DEC's favor was its price/performance ratio. A

large dual-processor system could be configured for approximately \$50,000/mo

Checkpoints

equivalent lease costs.

The DEC approach called for phasing in the system over an 18-month period and providing checkpoints for the university to watch.

The university was allowed to withdraw from the contract if these timings were not satisfactory.

DEC replaced the time-sharing first which was the easiest to convert and provided early returns on the investment. Other vendors suggested further developments before time-sharing was operational.

DEC argued that batch processing could be made subordinate on a time-sharing executive system more easily than vice-versa.

R.G. Ellis is director of the computer center at the University of Pittsburgh.

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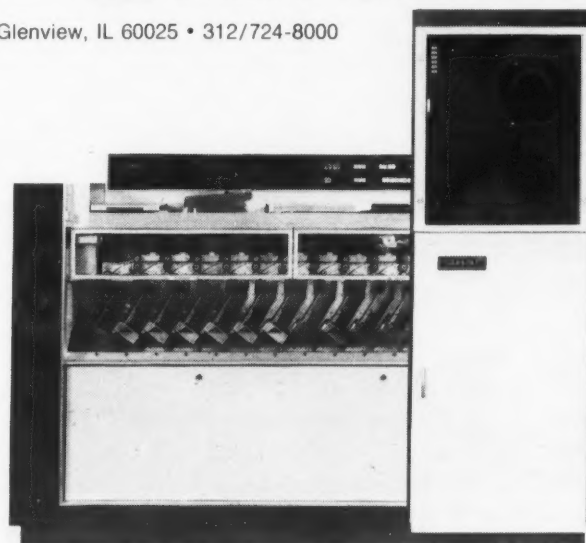
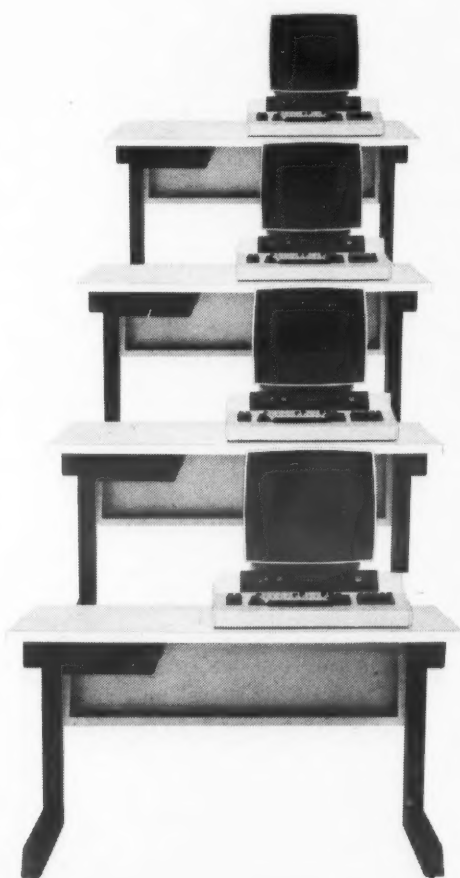
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About the Editor

This special report has been edited under the direction of Michael Weinstein, Computerworld's systems editor.

Univac User Has Nothing but Praise for Exec 8

MANKATO, Minn. — "We chose Univac, mainly because of software capabilities, and we've never had cause to regret it," stated Don Henderson, director of computer service for Mankato State College.

Prior to 1970, Mankato had a conglomerate of equipment, mainly earlier IBM 1401 and 1410 computers. As needs grew they were forced to go outside to time-sharing services and add equipment bit by bit.

In 1968, Henderson started to write specifications for a system that would move the school out of its "patch-work second-generation" operation into a centralized third-generation shop.

Dual Purpose

He wanted a system that would serve both the academic needs for remote terminal operation and allow administration batch needs such as general accounting and payroll.

These needs demanded a system with a large on-line storage capability coupled with ability to support demand-type terminals.

After documenting these needs into an RFP, eight vendors responded.

Univac was chosen on the basis of the strength of operating system software (Exec 8) and support promised to Mankato to help it begin.

"What we really liked," Henderson said, "was the ability to dynamically assign memory as per our needs. Other systems we looked at generally used fixed partitions."

"The ability to change the partitions in the Univac computer meant we could get more throughput by setting partitions based on the application we were running."

Other software capabilities that helped swing Mankato to Univac were the operator status capabilities which allowed

the user to determine from the operator's console the status of any job in progress.

A major hardware plus, Henderson added, was the communications capability that allowed attachment of various demand terminals — each with a different transmission rate — directly and smoothly into the central processor.

To add frosting to the cake, Univac offered Mankato the full-time support of two system representatives who would work with the user for one year helping him convert all programs and teaching system operation so Mankato could go it alone.

"All classes were taught at our site, at no additional cost," Henderson related.

"In the beginning we did not have a proper staff, and so much of the burden for the day-to-day operation fell onto the Univac people. Their help was essential until we could recruit and train our own staff."

They Blink by Night

On the morning of Nov. 20, 1970, three trucks arrived — each from a different part of the country — and the Univac people started to assemble the machine, Henderson remembers.

"It was the smoothest installation I ever experienced, and they had the machine up and the lights blinking by that night."

The system installed consists of a Univac 1106 with 262K-word memory, four

tape drives, one Fastran drum with a 132M character storage capacity, a 1782 drum with a 12.5M character storage capacity, various card units and printers.

Tied into the computer center are several remote job entry (RJE) stations which send and receive data, as well as terminals spread out through the campuses used by students and faculty for program teaching and development.

Henderson has set up his Exec 8 operating system to allow six concurrent batch jobs and up to 30 terminals to operate simultaneously.

At full pitch, he estimated response time at any terminal never exceeds 10 seconds.

Program compilers supported are Fortran, ANS Cobol, Basic, Algol, Snobol, Symscript and GPSS.

The only difficulty he reported was that sometimes initially it took too long for Univac to respond to software problems. But even here he qualified his feeling: "Maybe it was because we asked too much of them in the beginning while we were new to the system."

The only hardware problem was with the 6C tape drives which he said were too slow for the central processor.

"We now operate on a better than 99% uptime and have only experienced two or three system crashes that lasted more than an hour or two since the system went up," he concluded.

User 'Knows Who He Is'

Non-IBMer Must Develop Strong In-House Staff

TOLEDO, Ohio — Like a man who "knows who he is" and doesn't need the "frills," Bill McMillan of Questor Corp. went to a non-IBM system vendor to take advantage of system cost savings at the expense of software handholding.

But, he added, to save money by going to a non-IBM source it was necessary to develop a strong in-house personnel.

Questor got its first Honeywell computer — a 12K HIS 200 — in early 1966. Since then the company has expanded to its present configuration of two 2070s in the Toledo headquarters — one with 262K and the other with 394K — a 2040A in Michigan and a 2050A in Massachusetts.

Peripheral equipment tied to these systems includes 35 tape drives, eight Model 277 disk drives and assorted printers, card readers/punches, etc.

In evaluating the seven years with Honeywell, McMillan cited the necessary development of a strong in-house capability as a major advantage, not only in money saved but also in system efficiency.

IBM users many times come to depend

on their vendors to bail them out when trouble arises, he stated.

"If you are an IBM user and have a problem with a costing program for building products, it is reasonable to assume that somewhere IBM has an expert in this — or any other — particular field."

Handholding Costs

But this handholding costs money. McMillan stressed, and few users realize the extent to which they pay IBM to be there just in case trouble comes.

"By developing our own internal capabilities, we do not have to continually pay for services that we might use only once or twice a year," he added. In addition, after an initial problem is fixed and the expert is somewhere else, new requirements or problems may arise with no one present who understands the problem enough to provide a solution.

A Jealous Streak

If McMillan does envy IBM users in any way it is because of the large library of application programs available to them.

"For the non-IBM user to take an application program written for an IBM system and refit it to his own computer is a waste of time in most cases," he said, "as it is easier to start from scratch and write your own program."

Honeywell is finally realizing that it must provide more application packages, but it has taken Honeywell too long to get to this point, McMillan asserted.

The fact that Honeywell is improving in this area makes McMillan feel that for the

new Honeywell user the road will be much smoother.

By attempting to improve software support Honeywell's long-range position as a computer systems supplier will be improved, McMillan feels.

Even with recent improvements, he hopes more effort will be put into software capabilities such as sharing of files, data base management and field debugging.

On the other side of the coin, operating systems have always been good, McMillan said, pointing to his own operation. Under OS/2000 he is running multiple job streams as well as communications applications.

Toledo No Mecca but...

In building his internal staff, McMillan stated, he was surprised at the relative ease of finding good programmers and analysts locally for his Honeywell equipment.

To complement local personnel, he stated, he had very good success with the Honeywell Institute.

"From time-to-time we call and ask if there are any exceptional students. After interviewing and hiring several graduates we were quite happy with the results," McMillan said.

As for actual hardware operation, McMillan had only small complaints about initial problems balancing disk and tape heads.

Historically, he concluded, "Honeywell has done everything that could reasonably be expected of them to support our hardware operation."



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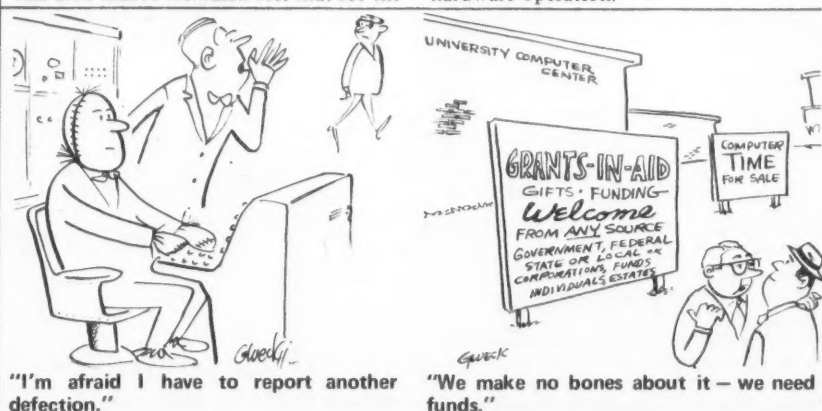
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Maintenance, Spare Parts Problems

Burroughs: 'Nice to Do Business With'

PADUCAH, Ky. — "Burroughs has consistently stayed ahead of the rest of the computer companies in releasing new products," John Williams of Computer Services, Inc. (CSI) believes.

But, Williams added, there are trade-offs. For the exceptionally good hardware/software capabilities the user generally faces, there are sacrifices in sales support, parts availability and training.

Nuts and Bolts

The biggest problem he sees for Burroughs users is the lack of an adequate network for distributing spare parts.

"At times I have had to charter a plane myself, just to insure that I was going to be operational the next day."

Another problem cited was in the area of maintenance, with "Burroughs like many other companies promoting from within. The result of this policy for the user is that many times his computer room is the training ground for the new engineer."

"After a while he is going to learn his

User Believes CDC Should Downplay Number Crunching

By Richard E.W. Smith

Special to Computerworld

The philosophy that attained success for Control Data Corp. in the scientific user area does not directly carry over for the business-type user.

Therefore, it will require some rather basic changes for CDC to become one of the leaders in the EDP marketplace. But I have few doubts that they will succeed in this effort.

But first, there will have to be some hardware changes. The supercomputer design of CDC has always been most efficient at arithmetic calculations — so-called number "crunchers." The ordinary business DP workload is not highly arithmetic oriented, but is dominated by the requirement to move massive amounts of data.

At Kaman Sciences the workload is about 60% business DP and 40% scientific. While there are certain inherent efficiencies in such a workload (if the programs are designed with considerable forethought), the Cyber computers are quite cost-effective for this job mix.

This may not be true for a strict business environment; however, recent hardware and software improvements by CDC favor business efficiencies. The compare and move unit (CMU) introduced with the Cyber is the greatest single contribution.

Kaman tests have shown that a string of 20,000 characters can be moved 20 times as fast with the CMU. Obviously, then, CDC is taking the appropriate steps with hardware.

Second, continual improvement must come in business software. That's not at all surprising, as software in general is the weakest area in the computing industry today.

I specifically said continual improvement because CDC has made great progress in business software in the last two or three years. We have been a CDC customer for ten years, but only with the release of Cobol 3.0 would we consider using CDC's Cobol.

We found the Cobol 3.0 programs well-written. They run faster and take less storage than when written in Fortran. We have also found poorly written Cobol programs will cause considerably more grief by increasing running time and storage requirements than poorly written Fortran programs.

In other words CDC's Cobol is not yet mature enough to keep mediocre pro-

(Continued on Page 39)

job, but in the meantime I wish Burroughs would charge me accordingly," Williams said wistfully.

Despite these drawbacks, Williams is quite content with Burroughs in relation to computer equipment from another vendor.

CSI acts as the computer facility for many of the local banks and some of the local commercial companies.

Operationally, CSI employs Burroughs equipment for the banking customers and an IBM computer for the commercial ones.

Burroughs equipment includes three B500s — each with 19.2K character memory — a B300, several magnetic tape drives, card equipment and MICR input devices.

At many of CSI's user sites, the firm has installed minicomputers to provide remote preprocessing capabilities.

With no disk equipment all programs are

loaded from tape which has led to some disillusionment with Burroughs tape peripherals.

"Subjectively, I feel the Burroughs unit is not as good as it might be," noted Williams, explaining that problems were mainly in the electromechanical operations, he related.

Not Arrogant

One of the most pleasing aspects of being a Burroughs user to Williams is the character of the firm itself.

"Their organization is still small enough that I feel comfortable with them. It is possible to get right to the source of solutions without getting involved in a lot of organizational red tape."

Most of CSI's business revolves around 16 application programs written by the CSI, so Williams had little experience with or comments on Burroughs-supplied application packages.

"Their organization is still small enough that I feel comfortable with them. It is possible to get right to the source of solutions without getting involved in a lot of organizational red tape." — John Williams, Computer Services Inc.

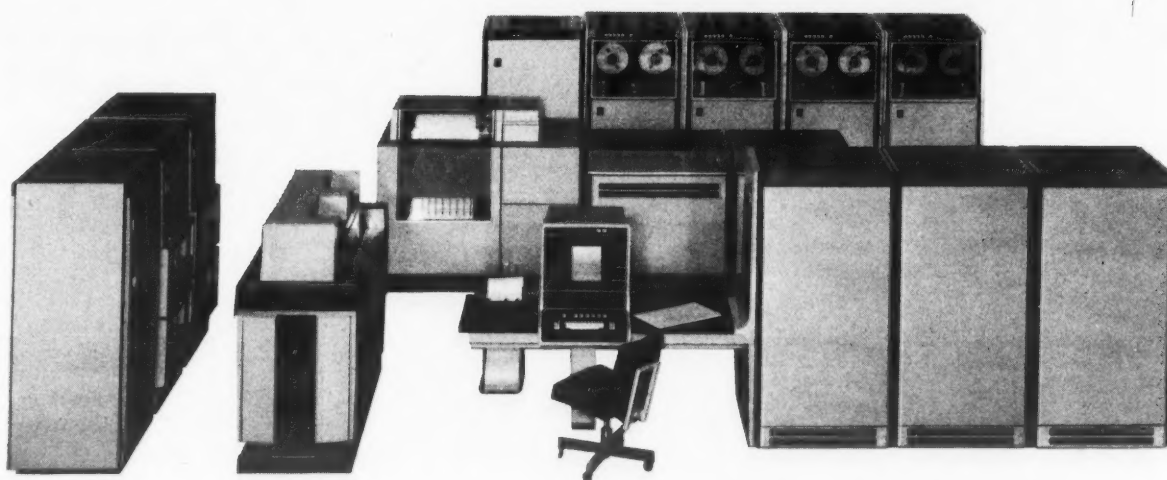
As for the operating software, he stated, "while it may be good for the general application, we found it could be more improved for our operation."

"Our particular assembler version was inadequate in cross-referencing and label-addressing. We could have upgraded to a different assembler, but then it was lacking in some of the areas where our present assembler was strong," he related.

This situation led Williams to rewrite part of the software and add modules to streamline his operation.

His experience is probably not typical, he said, and even before the changes the system worked well.

NCR proudly a newest member of the computer family ...



The "251" is an exciting addition to the completely compatible NCR Century family of computers. Many of the outstanding performance characteristics of its big brother, the NCR Century 300, are inherent in the "251" at considerably less cost.

Advanced hardware architecture includes: independent access paths to main memory for the I/O processor and CPU; independent asynchronous mem-

ory modules; separate user and supervisor registers; and multiple BAR/LAR registers—all of which are a must for efficient multiprogramming and real-time processing.

Sophisticated software includes a multiprogramming system utilizing these hardware features and supported by the ultimate in operator communications and control. The speed and flexibility of a CRT provides instantaneous system

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Kellogg Reports Smooth Sailing With Univac 1106

BATTLE CREEK, Mich. — "We wanted a machine that offered communications and multiprogramming capabilities, but was not too complex for us to operate," stated Ted Tuttle of Kellogg Foods.

After a careful evaluation period, Tuttle chose a Univac 1106 and reports smooth sailing ever since.

Earlier data processing at Kellogg followed a familiar pattern of a card-in-card-out basic stored program computer beginning in 1960. This was followed by an IBM 1410 in 1964 which was upgraded to a 360/40 and a 360/30 operating under DOS in the late 60s.

In 1969, Kellogg underwent an evaluation period made necessary by the changing nature of its computer operations.

The plan was to have a centralized computer facility provide the processing power for all of the company's offices around the country. Each office would be equipped with terminals, printers and other peripheral devices accessing the main installation over telephone lines.

From this plan a set of operating specifications was assembled that became the basis of an RFP to possible vendors.

Simple Operations

Besides the usual system size and configuration needs, Tuttle was looking for a system that provided simple communications operations and allowed multijob stream programming.

Additionally, to bypass potential conversion problems, the RFPs directed each vendor to run benchmarks for converting existing programs — mostly in Cobol — to be run on the bidders' machines. All vendors were restricted to using only as much hardware as they had bid for the benchmarks.

The output from each vendor was matched with standard output from the existing IBM 360 systems to determine filter devices and aids as well as timings.

From this evaluation two options were chosen as the most promising: stay with IBM and go into OS or convert to Univac.

A major consideration against going to

OS was that many internal people would have been needed for program maintenance, Tuttle said.

"We visited local shops that were running under OS and found in some as many as six people whose sole job was upkeeping OS. We thought this was a waste of personnel," he added.

Univac Offer Best

In 1971 the firm decided to go with Univac on the basis of price/performance, ease of operation and two unique features offered Kellogg:

- The system would be leased on a 24-hr day basis and thus there would be no charges for overtime.

- Univac would provide a full-time Site Engineer to be resident at Kellogg.

The system Kellogg acquired included the 1106 with 262K words; 12 9-track 1,600 bit/in. dual-density tape drives; two 9300 substations, including printer and card reader/punch; one stand-alone high-speed printer; two drum storage units with a total of 400M characters.

Prior to installation, Kellogg received another consideration in the form of a 9300 substation linked to an 1108 in Phoenix, Ariz. This was used to convert nearly all of Kellogg's programs prior to the actual installation of the leased 1106.

In September 1971, the computer was installed with the only remaining task being to test the converted programs on the new machine.

Since that time operations have been smooth with Tuttle adding new applications to his system. One involves eight display terminals tied to the 1106 for order entry; another is the impending use of remote job entry devices in remote stations for better throughput.

One of the most pleasing aspects of the new machine has been the resident systems engineer who tests all releases and brings them up on the 1106 before they are put into use, Tuttle said.

With the system in operation now, Tuttle evaluates the central processor as excellent, with almost no trouble reported.

The peripherals are graded as good with the exception of the 9300 substations which he feels are too slow and not dependable for large amounts of printing.

The software is more than he expected with highlights being the ease of communications software and the wide range of operator functions available, Tuttle said.

"From his console the operator can determine status information, internal time information, as well as access a good device cataloging program," he noted.

Since Kellogg writes most of its own applications software it has had minimal experience with Univac-supplied applications programs.

Finally, the resident SE has provided not only a good maintenance source but a vital communication link between Kellogg's operation and Univac, Tuttle stated.

User Believes CDC Shifting Priorities

(Continued from Page 38)

grammers out of trouble. A similar statement can be made for utility software such as Sort-Merge.

The area where CDC has the toughest road ahead is service. Our experience with service has been twofold.

The support at our central site in Colorado Springs has been satisfactory. Hardware maintenance has been quite good and the analyst support has not been detrimental.

From knowledge of other sites, our maintenance experience may not be normal. Many installations are extremely critical of their CE support. I can recall only one incident when our system was down for any appreciable length of time. Statistically, we show an up-time of 98.6% over the past five years.

CDC has been able to get away with low-caliber service mainly because of the market it serves. The large scientific organizations are generally more capable and more willing to assume the software maintenance burden than most business customers.

Outside our central site we have experienced very poor service. Our primary business is to provide services to certain industries, such as radio/TV stations, schools, banks and hospitals. In some of these services we install CDC terminals in the customer's facility.

Most often the customer is not computer oriented and consequently requires considerable support. We expect CDC, as well as any other manufacturer, to be responsive to the requirements.

But service has been lackadaisical in most instances in our remote sites.

Richard E.W. Smith is vice-president of Kaman Sciences Corp., Colorado Springs, Colo.

y announces the of the NCR Century y...the 251

Here's a combination of advanced hardware and sophisticated software at an exciting low price.

and job status displays, dynamic status updates, and touchplate control switches for rapid operator response. Other features include: I/O spooling, unit and file sharing, automatic job scheduling, remote job entry and dynamic resource allocation.

For the money, these kinds of advanced hardware-software features are all but impossible to find in other systems.

Call the nearest NCR office for the specific benefits you can expect from the NCR Century 251... as well as from any of the other five members of the growing NCR Century family.

NCR
Computers & Terminals

**Big computer systems
love Honeywell
minicomputers.**



You have a big computer. We don't care who made it. When you bless that big computer with Honeywell's System 700 minicomputers, good things happen.

Use them as satellite systems. They can provide immediate on-site computer services to your company's remote locations, while at the same time tying local operations in to your headquarters system. And they can do this whether your applications call for batch or transaction processing.

In your sales offices, they'll do things like processing orders. In your warehouses, they'll do things like keeping track of inventory. In your factories, they'll do things like scheduling jobs. In addition, they can communicate the pre-processed data directly to your headquarters, either off-line or on-line.

Use them as message concentrators. They can reduce your data communications line costs.

Use them for high-volume centralized data entry. They'll speed input and reduce the load on your main computer.

What your company's management gets from all this is more current information for decision-making, better control over operations, better service to your customers, and lower costs. What you get is a grateful management.

Now, not every minicomputer can do all this for you. It takes special hardware for the application interfaces, peripheral devices matched to the local operations, and operational software. In other words, it takes Honeywell's System 700 approach.

System 700 minicomputers are designed—from start to finish—to meet their basic reason for being: the business application. They're a modular family of products representing a broad range of capabilities. And they're strong in the capabilities that matter the most in a successful minicomputer installation. For example:

Communications

The System 700 uses a high-speed,

16-bit, real-time central processor. It will work with any system having binary synchronous communications capability. That means almost any central computer, regardless of who made it.

OS/700 Operating System

A very powerful and sophisticated operating system, OS/700 includes a powerful real-time executive that functions in a core-only or core-disk environment. It can handle communications, data base management, and real-time processing with equal efficiency.

Peripherals

Honeywell offers an exceptionally large choice of proven peripheral devices, including printers, teleprinters, disks, tape drives, card readers, card reader/punches, paper tape readers, paper tape punches, and communications controllers. In fact, we believe we offer the largest choice available from a minicomputer manufacturer.

Sensor-based Applications

A System 700 with the Honeywell Real-Time Interface (RTI) permits interfacing to a diversity of sensors, field contacts, logic signals, control elements and other devices. Such a system can communicate directly with your central computer, thus providing current information on production operations.

That's probably reason enough for choosing the System 700 for your minicomputer needs. But we have a couple more.

Honeywell is a major minicomputer supplier. So you have our assurance of support, and our commitment that they'll work the way we say they will.

Honeywell is also a complete-service computer company. We manufacture a full line of computers, so we have the experience and know-how to help you get the right kind of performance from your total system.

For more information, call our local sales office, or write System 700 Marketing Manager, Honeywell Information Systems (MS 061), 200 Smith Street, Waltham, Massachusetts 02154.

The Other Computer Company:
Honeywell

Hospital Hails CDC's Service To Health Field

By Warren Bassett

Special to Computerworld

PITTSBURGH, Pa. — In choosing a computer for Mercy Hospital the major consideration was finding a vendor that had a total commitment to servicing the health field.

At the same time, like most hospitals, Mercy was under strong public and government pressure to keep costs down.

Mercy Hospital believes it has found a vendor which meets both these objectives — Control Data Corp.

Prior to signing the contract with CDC, Mercy Hospital spent approximately four years exploring and analyzing all possible data processing alternatives.

These alternatives included seeking affiliation with a local group of hospitals which operates a joint data processing facility; consideration of an in-house installation which included proposals from most of the principal hardware vendors; consideration of affiliation with a shared data processing service which operates nationally; and the CDC "facilities management" alternative.

On November 3, 1971, a five-and-one-half year contract was signed between CDC and Mercy Hospital.

Under the terms of the agreement, CDC is responsible for providing total data processing services to the hospital including all hardware, software and operating personnel.

The only person on the Mercy Hospital payroll dedicated to full-time data processing is the data processing coordinator.

Payment to CDC is based on a "per transaction" or "per item" basis, and payment is not made until an implemented program is operationally acceptable to the hospital staff.

Additionally, the group of application programs that make up the patient finance package — Medisharp — must be totally implemented within a specified period of time.

No 'Headaches'

Thus, the hospital has no "operational headaches" of a data processing facility, and because of the payment and time clauses the hospital is assured that CDC will accomplish defined objectives within defined time limits.

The system installed at the hospital is based around a 98K Model 3300 CPU. The central processor is tied to one multi-disk drive, three disk storage drives, card reader, line printer, card punch and four magnetic tape transports.

Optional equipment includes a communications subsystem and remote batch terminals.

The applications software — Medisharp — is used to prepare billing notices and control admitting forms.

Under software control, the system also prints statements and collection notices for the credit department and generates statistical analysis for the cost accounting programs.

In addition to these standard packages, a patient data base has been established and Mercy Hospital is in the process of planning and implementing clinically oriented data processing programs such as a tumor registry, ECG analysis, a laboratory system and physiological monitoring.

Mercy Hospital is more than satisfied with the performance of CDC's software, personnel and hardware. CDC has taken the time to learn the operational problems of the health field instead of isolating itself in the mysterious world of bits and bytes.

Warren J. Bassett is director, methods and procedures, for Mercy Hospital, Pittsburgh, Pa.

HIS Gives a Little Extra to Small User

By Toni Wiseman

Of the CW Staff

PHOENIX — When Bob's Big Boy Restaurants opened in 1956, it was a small concern — one restaurant to be exact. But expansion followed and this eventually led to computerization in 1969, and with eight restaurants to oversee, the company invested in a GE-55.

Later, the need to convert to disks, not available on the 55, brought up the question of acquiring a new system, according to Lee Fobar, DP manager for the chain. Since the company does all its own programming, it was only interested in a basic system.

After considering both the HIS/58 and the IBM System/3, Fobar determined that both would meet their needs in terms of core and peripherals. Ease of conversion was the determining factor in the final choice of the HIS/58.

"The 58 is capable of using the old Gecol language in which all our programs are written, so we can take our current programs, recompile them, and that's the end of conversion," Fobar said, "whereas with the S/3 we would have had to rewrite everything into RPG."

A switch to RPG would have meant classes in language training which would come to a large sum of money. "We didn't want to go through another output of money," stated Fobar.

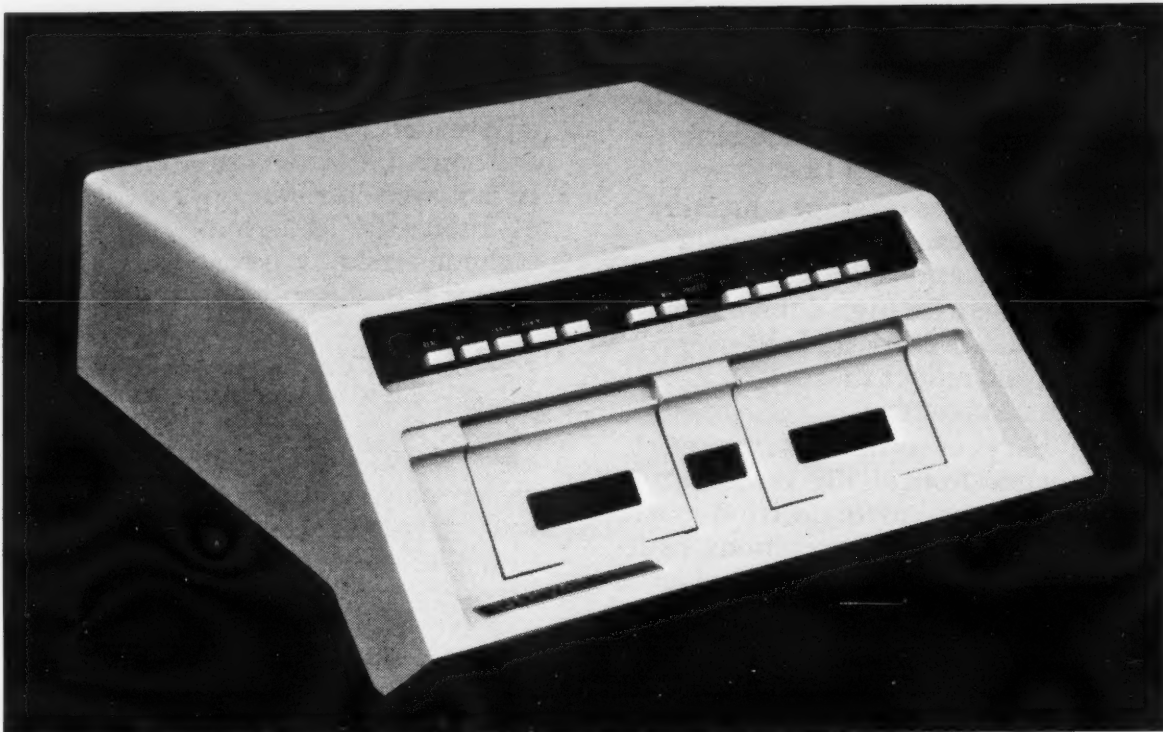
The company's DP department consists of three people: Fobar, who does all the programming; a keypunch operator; and a girl who runs the computer. This small size is compensated, according to Fobar, by the fact that the personnel in various departments (accounts payable, payroll, etc.) all know how to run their own particular applications.

"The 55 is a very simple machine to operate, and the 58 is basically simple too," Fobar said. "We like that because we can continue to have the girls run their own work."

The Honeywell lease terms made upgrading to the 58 a cost-effective alternative to a completely new system from another vendor. IBM offers investment credit without requiring a contract for a user-specified number of years, but Honeywell, with a five year contract, offers both investment credit and reduced rental which constitutes, in Fobar's opinion, a savings in the long run.

After ordering the HIS/58 with a 12K system, 100 line printer, and card punch with interpreter, a problem arose because the Bob's Big Boy Restaurant building is not equipped with the proper power for either the S/3 or the HIS/58. "It's going to cost a couple of thousand dollars to bring power into the building," Fobar said, "but to compensate for this, Honeywell has agreed to give us a three-month rental credit."

The new



UNIVAC 610 Tape Cassette System



UNISCOPE 100 Display Terminal



UNIVAC Communications Printer

NCR Users Like Hardware but Want Better Software

Problems Compounded By 'Neophyte Users'

ROCKVILLE CENTRE, N.Y. — The most common difficulty users face with NCR systems comes from the poor software and software support, according to John Guistra of Conversion Sciences, a software house specializing in NCR systems.

Many times, less than adequate software is compounded by users who are new to computers, he added.

"Many first-time users do not realize that a computer is just a piece of hardware whose efficiency is dependent on a good program of software development."

While courses exist, Guistra feels that many users fail to take the responsibility for attending and try to teach themselves from NCR manuals.

These manuals are poorly laid out and "while most questions can be answered

from the eight or more volumes, many users do not know the proper questions to ask."

Root of Problem

Support problems can be traced to NCR's efforts to sell their hardware very cheaply. This hardware is certainly very good, he added, but the low volume of rental derived does not allow NCR to provide adequate local support.

"NCR runs each branch as a profit center, and the branches find it difficult to pay the higher salaries needed to keep the more experienced support personnel."

"In many cases the user's SE is almost as new to data processing as the user himself. Many SEs were taken from the ranks of the firm's cash register representatives," he said.

When this happens users become prematurely disillusioned with a perfectly good piece of equipment and it can cause a residual bad feeling toward NCR.

In many cases the user is saved from

disaster by the fact that NCR operating software and utility and sort routines are sound, Guistra contended. Their strength allows users to run programs even if the users' programs are not so elegant or powerful.

Learning Under Pressure

In this sink or swim environment, many NCR users get to be quite proficient under pressure. They must write a large portion of their own applications as NCR has a limited and often-times inadequate supply.

Until NCR devotes more effort to this area, the NCR user should become more aggressive in acquiring programs from other users or consider purchasing software.

Finally and most important, most problems can be easily solved if the user hires the proper in-house personnel — including at least a manager analyst, programmer/operator and an operator/programmer, Guistra suggested.

Century 50 Expected To 'Spin Like a Top'

HARTFORD, Conn. — "In summing up my feelings as an NCR user, I would say we are very pleased with the hardware and feel our system is extremely cost-effective. Now if they could only do a little more work on the software," said Robert Dunphy, DP manager, Hartford Police Department.

"Looking back, it seems strange," Dunphy noted, "that we originally intended to go with a System/3 because of the hardware but had some reservations about the software. We went with NCR because we liked the software but had reservations about using the hardware."

As it turned out the hardware is good and once the software is fixed the little machines will "spin like a top," he said.

Dunphy, previously a systems analyst for Pratt & Whitney Aircraft, arrived at the police department in mid-1971 charged with the responsibility of developing a computer capability.

Prior to his arrival all police data had been keypunched even though the department had no computer; the rationale was that computing was coming and when it did the data would be ready.

"I found myself in the position of having large amounts of statistical data and no computer to provide processing capabilities," Dunphy recalled.

Dunphy's first thought was to obtain an S/3 with a disk subsystem since all his experience had been on IBM computers.

First analysis indicated that such a system would cost about \$25,000/yr. With this dollar figure and a list of objectives, he went to the city council for authorization to submit bids for a low-cost system with on-line disk facilities.

"A major consideration was to keep the cost low since we felt it was better to have the city pay for the computer than to ask for a grant from the government."

"In retrospect, this turned out to be a wise decision as many cities who got 'free' money from the Law Enforcement Assistance Administration are now worried that government cutbacks may bring their computing efforts to a halt."

With city approval, a Request for Proposals (RFP) was sent to various vendors asking for proposals within the specified price range.

System configuration was spelled out as a central processor in the 16K to 24K byte range; a low-speed printer, card equipment and an 8M to 12M byte disk subsystem.

Dunphy also asked the bidders to respond on available application packages — both of a general nature and special police applications — since the installation is basically a one-man shop.

"I felt there would not be enough time for me to both write all the software and perform my overall duties to the city."

Although Dunphy's original intention was to get an S/3, the arrival of proposals from other vendors caused him to re-evaluate his original plan.

But NCR was selected as the best offer on the basis of cost and promised software packages. These software packages included, in addition to standard computer programs, special police applications that Dunphy was interested in.

In mid-1972, NCR delivered a Century 50 central processor with 16K bytes of memory and peripherals specified in the RFP including 8.4M bytes of on-line removable disk storage.

Also included was the free software Dunphy had been so interested in.

Fortunately for the city, Dunphy's previous experience as an analyst enabled him to debug the programs.

"In many cases it was necessary to go right into the supplied software and re-write it, correcting here and discarding there," he commented.

Univac 610 Tape Cassette System: For 1.4 million characters of local CRT storage.

Our new UNIVAC® 610 tape cassette system provides local storage capability for the UNISCOPE® 100 display terminal.

The UNIVAC 610 interfaces with the UNISCOPE 100 to provide local, low-cost distributed data storage of up to 1.4 million characters for a wide range of data handling applications.

Our UNISCOPE 100 display terminal is designed to go on-line with virtually any computer system.

For example, IBM 2260 users can take advantage of this capability immediately through the emulation capability of the UNIVAC 3760 communications controller.

And you can combine our UNIVAC communications output printer with the UNISCOPE 100 and UNIVAC 610 to build a complete small batch terminal with total systems capability.

For more information, whatever your data communications requirements, contact the Sperry Univac representative in your area.

The UNIVAC 610 Tape Cassette System.

SPERRY UNIVAC

Only when our customers succeed do we succeed.

Xerox System Calmed User's Fear of Moving From IBM

By Harold Aaron
and
Kenneth Cannizzaro

Special to Computerworld

NEW YORK — Despite initial trepidation, the New York Institute of Technology (NYIT) moved away from IBM to a Xerox system.

The overall consensus after eight months of operation on the Sigma 6 is that Xerox has provided a viable approach in maintaining large-scale machine services while dramatically reducing operational costs.

The idea of switching vendors first began to take shape in January 1972 when NYIT attempted to reduce expenditures in the face of rising educational costs.

The computer center staff was asked to compile a report on alternative methods of cost reduction without incurring drastic cutbacks in computer service. The initial interpretation of cost reduction was construed to mean a smaller IBM computer.

NYIT and various secondary school users were then being serviced by a 1.5 Mbyte 360/65 running under OS MVT and HASP. Operational costs were substantial for a machine of this size, but it provided a wide range of necessary services from CALL/360 time-sharing to batch processing with excellent response time.

Thus, the first proposal came from IBM who proposed a 370/145 running under MFT. Since this 370/145 under MFT could not support concurrent time-sharing and batch operations, IBM proposed that the center segment its time. The center could schedule discrete batch and time-sharing operations using a trimmed down version of CALL/360.

But the impact this proposal would have on the end users was distressing and, as a result, NYIT was forced to look else-

where. A plan was formulated to contact and evaluate various computer manufacturers on their ability to meet these requirements:

- Ease of conversion
- Multiuser (time-sharing and batch) programming
- Compatible batch and time-sharing files
- Price/performance
- Large time-sharing user capacity concurrent with batch
- High performance compilers (e.g., response time)
- A wide variety of languages

At this point, it was not clear whether any vendor could provide what the center was looking for. It was assumed that some goals (e.g., compatibility between batch and time-sharing and concurrent operation) would have to be compromised. Each of the manufacturers was requested to propose its system in three stages:

- Stage 1 — Initial sales call and demonstration.
- Stage 2 — Question and answer period.
- Stage 3 — Practical demonstration of capabilities.

Initially, IBM could not meet the original criteria previously outlined. Univac could not offer a unified batch and time-sharing capability. In addition, the cost of the equipment was beyond the proposed budget.

Honeywell also could not offer a unified batch and time-sharing environment, however, the price was well within the budget. This narrowed the field down to Burroughs and Xerox.

Both vendors claimed they could meet the criteria and could remain within budget limits. The initial offering from each was as follows.

- Burroughs — B6700 running under

Sigma 6: the Good and the Bad

Negative Features

- Initially documentation was poor (now improved)
- Operating System releases were initially unstable (have been improved)
- Software support suffers from logistical problems

Positive Features

- Provides a high degree of multiprogramming between time-sharing and multi-batch, thus providing excellent CPU utilization
- JCL for UTS is extremely easy to use and often not needed. Time to master — one to two days
- Systems staff is free to do development work and is not required to constantly "babysit" the operating system
- Excellent terminal flexibility
- Operators find system easy to run since UTS does resource scheduling and allocation
- System backup procedures are efficient, easy to use and automatic
- UTS gathers easy to use, comprehensive accounting and systems performance data
- Total file compatibility between batch and time-sharing applications
- Wide range of processors (compilers) available (conversion minimal)
- Excellent Xerox conversion of PL/I and Cobol applications
- Large time-sharing capacity
- Commonly used processors (e.g., compilers) are re-entrant
- UTS is a virtual memory operating system that successfully handles swapping without page thrashing

MCP.

- Xerox — Sigma 6 running under UTS.

After the initial sales call by each vendor and after extensive question and answer periods, the center was given some hands-on experience with the systems.

After an extensive evaluation the school was left with Xerox's initial proposal and a second proposal from IBM.

The new IBM proposal consisted of adding more core to the 145 to enable batch and CALL/360 to run concurrently. However, the size of each program user area was seriously limited.

In addition, this new proposal with increased core size was at the maximum dollar limit of the school's budget.

The computer center staff then visited Carleton University in Ottawa, Canada, to see the UTS System running on a configuration similar to the one Xerox had proposed. All of the claims that had been made appeared plausible.

The Canadian site was supporting over 50 time-sharing terminals with concurrent multiprogramming batch streams. The system was impressive since all programming and debugging was done on-line for batch as well as time-sharing applications.

The university appeared satisfied with the Xerox system running under UTS, although it was not running under the latest UTS release.

NYIT submitted existing PL/I and Cobol applications to Xerox to test their conversion support. Within two weeks they had satisfactorily converted the applications, thus demonstrating their ability to aid in the proposed transition.

At this point, IBM returned with another proposal. IBM offered more core

to provide an increase in program user area, but the school could not afford the additional core.

After much discussion and anxiety, the decision was made to order a Xerox Sigma 6 computer running under UTS.

The Sigma 6 has been running for about eight months. The system supports 43 on-line terminal users and concurrent multiprogramming batch usage.

Harold Aaron and Kenneth Cannizzaro are on the DP staff at NYIT, Long Island, N.Y.



7700A Desk Console



7700A with Remote Keyboard



7700A Rack Mounted

Pick any version of the LSI 7700A DISPLAY TERMINAL—they all have:

1. Protected format
 2. Full edit capability
 3. Total cursor control
 4. Error indication
 5. Cursor addressing
 6. Non-glare screen
 7. Printer-cassette options
 8. Teletype compatibility
 9. Polling and addressing
 10. Serial or parallel interface.
- Plus 7 more big features that will keep your system flexible and updated.

Our new brochure tells why the 7700A is a better machine and a better investment for the OEM or the end user.

Notice, we **LSI** are in the data products business.

LEAR SIEGLER, INC.

ELECTRONIC INSTRUMENTATION DIVISION

Attention: Burroughs Medium Systems Users!

Can you handle the hidden expenses of programming your own handler?



Sure you can, if you have an open-ended budget. If you have a few extra highly trained programmers with a lot of extra time. And if you have the patience and steel nerves to endure months of testing, de-bugging and re-programming.

Sure, you can program your own handler, but why do it? Why re-invent the wheel? There is another way to get a handler program—from your hardware vendor. But can you really satisfy your growing needs with a simple handler from a vendor?

Can you afford to compromise efficiency? You know the answer to that, don't you? Let's consider the better alternative, the alternative with a fixed, known price, the alternative that doesn't mean compromise.

Let's consider **CHAMP**.

CHAMP is a generalized data communications and total environment control system for the Burroughs Medium System Computers. It is designed to serve data communications networks of varying sizes, perform all message queuing and switching functions and provide comprehensive system control features.

CHAMP saves memory by sharing core among several applications and batch programs. It is a modular system that lets you begin with a small system on minimal hardware and expand in small increments as your work load builds up. It is a system for data communications as flexible and dynamic as MCP.

CHAMP frees your programmers to concentrate on the real job: application design and programming.

CHAMP is the way to eliminate the hidden costs of programming your own handler... without compromise!

*Communications Handler for Automatic Multiple Programs

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COMPUTER INDUSTRY

CI Notes

DP Merger Activity Drops

CHICAGO — Merger activity in the computer services and manufacturing field fell 40% in 1972, according to W.T. Grimm & Co., a financial consulting firm. Net announcements in the DP category amounted to 81, down from the 135 recorded in 1971.

But overall merger activity for the 40 categories covered by the study totaled 4,801, a 4% increase over the 1971 total of 4,608.

Within the computer classification, 58% of all transactions represented divisional or fractional sales. In 1972 there were 47 divisional sales, down from 84 in 1971, the study showed.

Honeywell to Buy Datapoints

SAN ANTONIO, Texas — Honeywell has agreed to purchase Datapoint 2200 systems for marketing under its own label.

Honeywell said no details on the configuration, marketing methods or price are available yet. The agreement is thought to cover a new 48K-memory version of the unit. Datapoint presently makes the 2200 with 16K.

Information Marketing IIA Topic

PHILADELPHIA — The Fifth National Meeting of the Information Industry Association (IIA) will examine "Information Futures: Product Planning for Profitability."

Sessions at the meeting April 2-4 at the Penn Center Holiday Inn will investigate techniques and feasibility of marketing information byproducts of a firm's operations. The IIA is at 904 Montgomery Bldg., Washington, D.C. 20014.

Rapidata, Standard to Settle

FAIRFIELD, N.J. — Rapidata, Inc. and Standard Computer Corp. have agreed to terms of settlement for a breach-of-contract lawsuit brought by Rapidata against Standard in 1969.

Under the terms, all claims against Standard and Standard's counterclaim will be dismissed.

Supershorts

Microdata Corp. has shipped the 2,000th Model 800 minicomputer.

General Automation, Inc. has signed a contract with Documation, Inc. for the purchase of 500 Documation punched card readers over the next two years.

Centronics has received a \$5.2 million order for printers from Computer Related Equipment Ltd. of Germany and England for delivery during the next 12 months.

Naco, an affiliate of Fuji Motors Corp., Tokyo, has been named Japanese distributor for Syncom Inc. products.

Installed Base Passes W. Germany

Japan Now Called Number Two DP User

By E. Drake Lundell Jr.

Of the CW Staff

NEW YORK — Japan is now the number one computer-using country outside of the U.S., surpassing even West Germany in the total number of computers installed, according to Patrick J. McGovern, president of the market research firm, International Data Corp. (IDC).

According to the IDC figures, 19% of the computers installed by all manufacturers outside of the U.S. are now in Japan, with 14% in West Germany and 13% in the UK.

Next come France with 12% of the installations outside the U.S., and the Soviet Union with 8%. Other Western European computers account for 14% of the installations, while Canada has 6%, and Italy has 5%.

2.1% of Japan GNP

The installed base of computers in Japan at the end of 1972, McGovern related at an industry briefing here, was valued at \$4.4 billion and represented 2.1% of the Japanese gross national product that year.

On the other hand, computers installed in West Germany were valued at \$3.4 billion. This represented 1.74% of the gross national product of that country.

According to the IDC figures, a country with a computer-to-GNP ratio of 1.4% to 2.1% is average and has a computer growth potential of 13% to 17% yearly.

A country with a ratio of less than 1.4% is considered undeveloped in computer use and can be expected to chalk up growth rates in the range of 20% to 25%.

A country where the installed computer base is over 2.1% of the GNP, however, is considered to be approaching saturation in computer use and will see a growth

rate of 10% to 12%.

Therefore countries like Switzerland with a ratio of 2.42%, due to its concentration of banking institutions, will show a slower growth rate than ones like the Soviet Union with a ratio of .36%, the lowest in the world.

To put the ratio into perspective, the U.S. currently has an index of 2.87% and so will be in the slower growth category, the figures showed. The international average for countries outside the U.S. is 1.12%, which indicates the greatest growth in computer use will be in the international market.

Countries currently below average in computer use, and therefore ones that will show the greatest growth, include Italy, Belgium, Spain, Brazil, South Africa, Norway, Mexico, Finland and Austria, according to IDC.

At Home Abroad

Among the computer manufacturers, the share of the international market breaks down much the same way as does the U.S. market, the IDC figures found, except that IBM's international share is less than its share of the U.S. market.

Outside of the U.S., IDC said, IBM has 46.8% of the installed base of computers

followed by Honeywell with 8.1% of the base. International Computers Ltd. is next with 6.9% of the base, followed by Univac with 5%, Burroughs with 2.9% and Control Data with 3%. Siemens has 2.3%, while the three major Japanese makers have 10.6% in total.

In all, U.S.-based mainframe makers control 69.6% of the non-U.S. base of computers, while foreign manufacturers account for only 30.4%, McGovern said.

One trend presently catching on in Europe in general, McGovern noted, is the use of independently manufactured peripherals which are now being accepted by European computer users much as they have been in the U.S.

In addition, he noted, the European market was just opening for U.S. firms in the area of third-party leasing, and might be a good market for the leasing of 360 equipment.

In the Japanese market, McGovern said, a relatively high growth rate would continue, even though Japan had a high EDP to GNP ratio of 2.1%.

He noted the growth rate had been 40% annually for the past six years and the upswing should continue because of the government emphasis on computerization and industry emphasis on efficiency.

Commerce Shows Imports Rose In '72, Exports Off '71 Pace

By a CW Staff Writer

WASHINGTON, D.C. — Exports of computer equipment dropped slightly during 1972 compared with 1971, while imports of such equipment rose during the period, according to figures released by the Commerce Department last week.

The Commerce figures reflect only shipments from U.S. plants in the states and do not include those from plants located abroad and operated by U.S. firms.

Overall, the U.S. exports of computer-related equipment were valued at \$1.2 billion during the year, which is down slightly from the previous year, Commerce said.

The exports of complete mainframes and central memories were valued at \$357 million, down from the \$374 million of such devices exported in 1971 — and far off the pace of \$427 million registered in 1970, the department noted.

Input devices accounted for exports of \$17 million while output devices accounted for exports of \$33 million. Combination input/output devices accounted for exports of \$203 million, down from \$250 million registered last year.

Random-access storage devices were responsible for exports totaling \$83 million while other storage and memory units accounted for exports of \$68 mil-

lion, approximately the same as the exports in these categories last year.

Statistical machines used with punched cards or tapes had a value of \$156 million during the year, the department reported, with the best markets for this type of equipment being in Canada, France, the UK, Japan and West Germany.

Imports of data processing equipment, however, showed a significant rise during the year, the department noted, even though the dollar value of these imports is still small.

Overall, the U.S. imported DP equipment with a value of almost \$50 million or a 65% increase over the same category of imports last year.

The Commerce report couldn't have come at a worse time for those in the computer industry arguing that multinational computer corporations are a major contributor to the U.S. export market, even though it does back up some of their contentions, sources said last week.

This is because, they said, the rate of exports of computer equipment seems to have slowed down while the rate of imports has been increasing.

Today the balance is preponderantly in favor of the U.S., but what will happen years from now if the present trend continues? one source asked.

CDC Acquires ITT's English Time-Sharing And Services Unit

LONDON — Hard on the heels of Control Data Corp.'s takeover of IBM's Service Bureau Corp., CDC's British unit has acquired the assets of ITT Industries Data Services Division for an undisclosed price.

CDC said the kind of business being conducted by ITT Data Services Division complements CDC's plans for Europe in the data services area. The ITT division, located here, offers time-sharing and remote job entry and programming services. CDC already has a remote batch data services business on the continent.

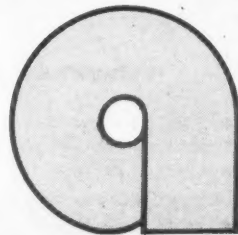
The annual revenues of ITT Data Services are estimated at \$5 million.

CDC currently operates data centers with CDC 6600s in Stockholm, the Hague and Frankfurt.

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Source Data Entry Seen Helping Optoelectronics 30% Growth in '73

NEW YORK — Optoelectronics shipments grew 25% to \$106 million from \$86 million in 1971, and a 30% volume gain is projected for 1973, according to a report from Frost & Sullivan, Inc., a market research firm here.

By 1978, annual revenues are expected to be around \$265 million. A principal growth market will be the source data entry area, the study indicated.

"Advancements in the technology needed to make OCR cost-effective are now appearing," the study observed. Other important markets are also expected to develop in instrumentation and controls, optical encoders and isolators and automobile manufacturing, the report added.

In the computer peripherals

field, especially memories, substantial growth is projected for laser technology.

Frost & Sullivan noted that liquid crystal displays will see the highest growth rate in dollars in the years 1972-78, with a 2,300% rate, while optical couplers/isolators will grow at a 370% rate; light emitters, 284%; and monolithic arrays, 154%. Laser devices are expected to have a growth rate of 133%, trailed by light sensors, at 85%.

The report noted that the technology of liquid crystals has "moved suddenly into the forefront of displays after years of being on the back burner."

The growth prognosis in the report applies also to the older optoelectronic technologies now "gaining in usage, such as cadmium selenide photocells and phototubes."

Multinational Tax: IBM Safe?

NEW YORK — Legislation that would tax foreign income as earned income would not affect IBM's earnings very much, if at all, according to a study by Bear, Stearns & Co., a securities firm here.

The legislation is contained in the Burke-Hartke bill, among others, and would prevent U.S.-based multinationals from avoiding U.S. taxation on foreign-source income until the income is repatriated.

Bear, Stearns & Co. published a table of what it called multinational firms' global tax rates, generally based on 1971 data. If a firm's rate is below the U.S. rate of 48%, the report noted, such a company would indeed be affected adversely by such legislation.

IBM's global tax rate, according to the study, is 48%, so legislation would not have any such impact.

The study also said that for some multinationals the change wouldn't mean a drop in reported earnings because some firms' shareholder reports show U.S. taxes on foreign income as though the income had been repatriated and taxed, although that is not the case.

Calcomp Growth Seen Jumping

WILMINGTON, Del. — Calcomp Computer Products Inc. (Calcomp) has the potential for growing "almost twice as fast as

the industry during the next five years and the potential for reaching an annual volume of \$100 million by 1974," President Lester L. Kilpatrick told securities analysts here recently.

Citing Calcomp's position in the graphics business as the "difference between Calcomp and other companies in the IBM plug-to-plug replacement market," Kilpatrick said, "Calcomp hopes to grow at an approximate 30% compounded rate per year in the seventies."

This compares, he added, with an industry growth estimated at 16%-18%.

"Calcomp's growth from \$53 million in fiscal 1972, ended June 30, to about \$75 million in fiscal 1973 and a projected rise to \$100 million by 1974 is predicated on a unique leadership in computer graphics and competitive leadership in disk drive memory systems," he observed.

Air Force Awards Four DP Contracts

HANSCOM FIELD, Mass. — The Air Force has awarded several fixed-price contracts for equipment at the San Antonio Data Services Center, for a total of \$616,017.

Sharing in the awards are Telex Computer Products Inc., \$374,510; Tracor Data Systems, Inc., \$188,304; Federal Data Corp., \$35,143; and Comdisco, \$18,060.

Recognition Equipment has received a contract from the U.S. Postal Service to extend the capabilities of the Code Sort Optical Character Reader system currently installed at the Cincinnati Post Office.

Data Technology Pty. Ltd., Sydney, Australia, has signed a contract with Computer Products, Inc. for the firm's RTP line of input/output equipment. The contract is part of another contract from the State Electricity Commission of Queensland to supply an industrial acquisition and control computer system for the Gladstone Power Station.

Academy Computing Corp. has signed a three-year contract with Mercy Hospital, Oklahoma City, Okla., to provide patient accounting and billing services.

The Helitron Division of S.P. Woodsum Associates, Inc. has contracted with Itronics Corp. to build special computer-oriented equipment for the Return Data Division of Jordan Dennis Co.

The Credit Bureau of Omaha has entered into a services contract with Chilton Corp. Under the five-year agreement Chilton will automate the Omaha bureau, train all personnel and provide all DP services.

The Transcom subsidiary of HI-G has received a contract from Ford Motor Co. for 1,000 Audiopoint 160 terminals for use in a direct order entry system for spare parts.

Data Dimensions, Inc. will assume responsibility for the billing and accounts receivable of Clark Boardman Co., publisher of treatises and newsletters for the legal profession.

The Transit Systems Division of Keene Corp. has received a contract from the Kansas City Area Transportation Authority for its Automatic Fare Collec-

tion and Revenue Processing System for use with Kansas City's 300 buses.

A \$1.4 million contract was

Contracts

awarded to Trans-A-File Systems Co. by the University of Rochester, Strong Memorial Hospital, for a medical record and retrieval system.

Rapidata Inc. has signed a three-year \$7.7 million dedicated service contract with the N.Y. Telephone Co.

Orders & Installations

Korvettes, a national retail chain, has ordered 2,000 NCR 280 point-of-sale terminals. The order is the second part of the company's program to convert to a computer-based point-of-sale system.

First Data Corp., a time-sharing/batch utility, has ordered a Digital Equipment Decsystem-10 to expand its facilities.

Inmont Corp. has ordered a Burroughs B6700, 17 B1700s and 63 TC 500 intelligent terminals to establish a corporate data base and nationwide data communications network for manufacturing and marketing functions. The order is valued at \$6 million.

The State of Georgia has ordered dual Comten 45 communications systems to control a statewide criminal justice network. The system will also be connected to the FBI's National Crime Information Center.

General Tire and Rubber Co. has installed Software Design Associates, Inc.'s RCA 501 Simulator software.

The U.S. Treasury has ordered a 2250 data entry system from Scan Data for use in its Washington, D. C. disbursing center.

Bancsystems Association, Cleveland, has purchased a Telecontroller communications processor system from Action Communication Systems. The system will serve as backup for Master Charge authorization equipment.

Weingartens, a Houston-based retail chain, will install Nuclear Data's Electronic Store Information System.

Random House, Inc., Westminster, Md., has ordered a Univac Series 70/60 system worth \$1 million.

E.I. Dupont de Nemours Co. has ordered intelligent terminal systems from SYS Computer Corp.

Eastern Airlines has ordered CC-70 front-end data communications systems from Computer Communications, Inc.

Loyola University's Hospital/Medical Center, Chicago, has installed Compress' Hyper-Faster teleprocessing monitor to support an on-line hospital information system.

Tabulating Consultants Inc. has ordered two NCR Century 300 computers, worth over \$3 million, for trust fund administration.

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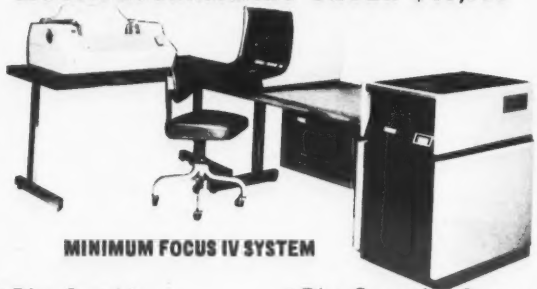
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NCR Reviews Market Philosophy, and Is Pleased

By a CW Staff Writer

"NCR has paid the price of admission into the computer society. We are now more experienced in every respect and this will benefit our market penetration in the future," said President William S. Anderson in a recent interview.

For the first time, he added, NCR's computer operations are close to profitability. In the overall sense, because of the stimulus they provide for the sale of data terminals and other NCR products, they are already contributing to corporate profitability, he said.

'IBM on My Mind'

"If you are not IBM, you have to try to live in an industry which is heavily dominated by one company. So far, we've managed. Naturally, we worry about IBM. On the other hand, even IBM can't be everywhere at the same time.

"We intend to concentrate on those areas we know best and continue to offer the customer good, solid incentives to go NCR instead of IBM. And if we do a better job for him, which we can in many areas, then we can continue to grow in EDP," Anderson asserted.

NCR's approach of viewing the computer as an integral part of total business systems, rather than as a separate entity, evolved from the firm's position as a large supplier of general business machines, Anderson added.

The two most recent surveys of first-time computer users conducted by International Data Corp., for example, showed NCR capturing about 15% of the market, second only to IBM, he said.

In the 1960s, NCR's sales volume tripled, largely because of the firm's efforts to link its data entry machines with computers via punched tape, magnetic ink character recognition and optical scanning.

Strategy for 1970s

NCR's marketing strategy for the 1970s consists of emphasizing a range of data terminals and DP equipment supported by prepackaged applied programs.

Although NCR may have been slow to reach stature in the computer industry, the DP segment now represents the fastest growing area of NCR's business, and Anderson expects this trend to continue.

NCR first began delivering computer systems over 10 years ago, but only since the introduction of the Century Series has it become a significant factor in the computer industry, Anderson said.

About 3,500 of NCR's installed worldwide base of 6,850 computers are of the Century Series, he noted.

In 1972 NCR installed approximately 1,000 Century Series systems for the third consecutive year and also shipped a record amount of add-on equipment to current users.

Total DP shipments increased from \$210 million in 1971 to a record \$245 million last year, he said.

Revenues from computer rentals and sales rose to \$251 million, also a new record, up from \$214.6 million the previous year. These figures do not include DP field engineering revenues or revenues

British Sign for Space At Communications Exhibit

NEW YORK - The British Department of Trade and Industry has reserved a block of booths at the Electronic Communications '73 exhibit here Oct. 2-4.

The British government agency will underwrite a portion of the cost to UK firms as part of its trade encouragement policies.

The show, scheduled for the Coliseum, will include a "how to" exhibition of equipment for administrators and communications managers as well as a separate section for equipment designers.

National Expositions Co., show coordinator, is at 14 W. 40th St., 10018.

from the company's worldwide network of 84 data centers.

Terminal Growth

In the terminal area, NCR is aiming at both the specialized and general-purpose segments. In the past two years, the firm has increased its share of computer installations in commercial banks from 12% to 18%, aided by the introduction of the 270 Series.

The firm is planning additional families of terminals for markets such as hospitals, motels and hotels, Anderson indicated.

The NCR 260 Series of general-purpose terminals features heat-activated printing and speeds up to three times faster than those of conventional teletypewriters, he said.

Joint Venture Productive

Computer Peripherals, Inc., the company jointly owned by Control Data Corp., is now in the full-scale production phase and is supplying computer peripherals to both NCR and CDC from

four plants.

The sharing of research and development expenditures in the computer peripheral field and the achievement of lower unit costs through greater volume already are contributing positively to NCR's computer operations, Anderson said.

Company Profile

Last year almost half of the company's sales volume was generated outside the U.S. The company has about 450 sales and service offices abroad and operation in every country of the free world. Engineering and manufacturing is also multinational.

NCR is projecting further gains in its computer operations in 1973 based on recent product releases, additional releases scheduled for this year both in the hardware and software areas, and the

general resurgence of the economy, according to H.V. Schiffer, vice-president, EDP Products and Systems.

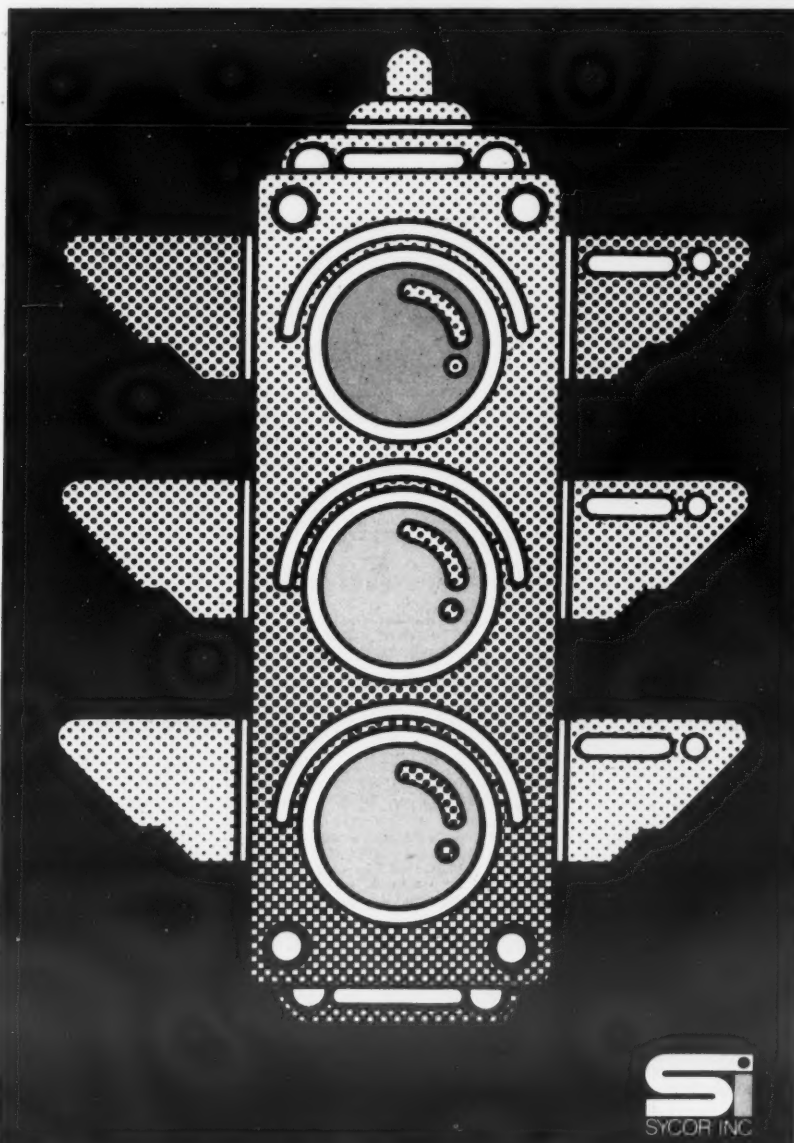
To capitalize on this opportunity, Schiffer is expanding his computer sales force by approximately 10%.

Further growth is also foreseen for NCR's data center operations, which have been growing about 15% a year since the first three centers were opened in 1960. Revenue generated by the centers in 1972 was \$44 million. NCR will offer computer output microfiche services at all its 38 domestic data centers as well as a number of the 46 centers overseas.

In addition to the stream of new products created by R&D expenditures of \$110 million in the past two years, NCR has been undergoing other major changes, Anderson pointed out.

Production and engineering operations have been completely reorganized and decentralized, with engineering, advanced development and manufacturing support integrated at the individual plant level.

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Inforex, GCS

2 Key-to-Disk Makers Improve Reports

Two key-to-disk makers, Inforex, Inc. and General Computer Systems, Inc., have turned in profitable, vastly improved reports for the year and six months respectively.

At General Computer Systems, revenues for the first half-year were almost equivalent to those for the entire previous year.

With revenues of \$4.4 million compared with \$1.5 million in the same 1971 period, earnings totaled \$361,372 or 22 cents a share compared with a loss of \$409,905 or 33 cents a share in the year-ago period. The 1972 figure included a \$170,209 tax credit.

This marked the firm's second

constructive profitable six-month term.

The order rate has improved "substantially," according to President Barry Weinberg, who noted the restructuring of pricing schedules making GCS competitive for customers desiring a smaller number of terminals has increased the prospect list "dramatically."

Dramatic Turnaround

In both the quarter and year ended Dec. 31, Inforex showed a dramatic turnaround, aided substantially by entering as sales its transactions with Leasing II.

In the three months, the firm earned a record \$693,000 or 27 cents a share compared with a loss of almost \$2 million or 89 cents a share in the previous year's period.

Revenues rose to \$7.3 million from \$2.1 million, and included \$1.4 million in sales to Leasing II.

In the year, Inforex earned \$1.2 million or 51 cents a share compared with a loss of \$5.7 million or 29 cents a share. Revenues, including \$6.6 million in sales to Leasing II, rose to \$23.1 million from \$4.9 million in the year-ago period.

Record Shipments

During the quarter, a record 1,898 keystations were shipped, bringing total worldwide deliveries to 11,847 since shipments began in February 1970, the firm said.

The company entered 1973 with a total of 729 directly serviced end users in the U.S. and Europe, up from 321 a year ago, noted President Thomas B. Horgan.

Emphasis during the year was placed on achieving profitability, which was done "by holding development and administrative expenses fairly level through most of the year, increasing expenditures only in the marketing and field engineering areas as required to expand the revenue base," Horgan remarked.

MAI First Quarter Turns Around

NEW YORK - Management Assistance Inc. managed to show a turnaround for the first quarter ended Dec. 31 with earnings of \$242,000 or 1 cent a share compared with a loss of \$455,000 in the year-ago period.

The portion of the firm's revenues contributed by the marketing of its Basic/Four system and maintenance services of its Sorbus Inc. subsidiary rose to 51% or almost \$8 million from 17% or \$2.1 million in the same period last year.

Total revenues reached \$15.8 million, up 26% from the \$12.5 million in the quarter a year ago.

Later than anticipated billings

and collections in the Basic/Four program continued to create a strain on MAI's cash position, according to President Raymond P. Kurshan.

The firm is continuing discussions with financial institutions to develop a program to finance accounts receivable from domestic sales of Basic/Four systems, and MAI may also seek a re-scheduling of its long-term debt payment arrangements, he said.

Sales of unit record and other older equipment by Genesis One Computer Corp., the marketing subsidiary, continued in excess of the forecast, Kurshan added.

Acquisitions

Academy Computing Corp., an Oklahoma City-based company, has acquired Clinton Data Processing, Inc., to expand its customer base to western Oklahoma.

Tesdata Systems of Chevy Chase, Md., has agreed to acquire Computer Syntectics, Inc., Santa Clara, Calif. Computer Syntectics will become Tesdata's Western Operation Center.

Axicom Systems, Inc., a subsidiary of Transport Data Communications, Inc., a time-sharing and data base management company, has entered into an agreement with National Equipment Rental to acquire Satellite Computer Services of Philadelphia.

LVO Business Forms, Girard, Kan., has been sold by LVO Corp. to James R. Orwig, presi-

dent of the subsidiary. The firm's new name will be Forms Manufacturers Inc..

PCS Data Processing, Inc., New York, has acquired Brokerage Service Corp. for \$344,400 and 47,250 shares of PCS common stock. Both companies provide data processing and recordkeeping services for the securities industry.

Automatic Data Processing Inc., Clifton, N.J., has agreed to acquire National Inventory Control Systems, of Portland, Ore., for about 170,000 common shares, on a pooling-of-interests basis.

Southwest Peripherals of Phoenix has acquired the Computer Products Department of Wabash Computer Corp., also of Phoenix.

Earnings Reports

ELECTRONIC ASSOCIATES

Year Ended Dec. 29

	1972	a1971
Shr Ernd	\$.61	\$.36
Revenue	43,256,000	34,417,000
bSpec Cred	688,000	651,000
Earnings	1,647,000	961,000
3 Mo Shr	.29	.28
Revenue	13,873,000	12,690,000
cSpec Cred	198,000	518,000
Earnings	778,000	753,000

a-Restated to reflect merger of Infonics Inc. with Electronic Associates on a pooling-of-interests basis. b-In 1972 consists of tax credit and gain on sale of business; less loss on currency realignments; in 1971 consists of tax credit, gain on currency realignments and sale of land and building; c-In 1972 consists of tax credit less loss on currency realignments; in 1971 consists of tax credit and gain on currency realignments.

PITNEY-BOWES

Year Ended Dec. 31

	1972	1971
Shr Ernd	\$1.02	\$.84
Revenue	342,144,000	300,918,000
Disc Op	.....	(736,000)
Spec Chg	.....	348,000
Earnings	13,640,000	11,337,000
3 Mo Shr	.34	.22
Revenue	98,085,000	83,714,000
Disc Op	.....	(198,000)
Spec Chg	.....	241,000
Earnings	4,514,000	2,969,000

COMPAC

Three Months Ended Dec. 31

	1972	1971
Shr Ernd	\$.13	\$.11
Revenue	6,697,736	5,430,113
Earnings	133,064	67,756

INFOREX

Year Ended Dec. 31

	1972	1971
Shr Ernd	\$.51	.....
Revenue	23,116,000	\$4,894,000
Spec Item	a747,000	550,000
Earnings	1,228,000	(5,710,000)
3 Mo Shr	.27	.....
Revenue	7,320,000	2,127,000
Spec Item	a294,000	b550,000
Earnings	693,000	(1,953,000)

a-Tax loss carryforward. b-Special charge.

VARISYSTEMS

Three Months Ended Dec. 31

	1972	1971
Shr Ernd	\$.19	\$.15
Revenue	1,941,700	1,239,282
Spec Cred	.....	a18,000
Earnings	206,500	123,163
6 Mo Shr	.12	.23
Revenue	2,855,700	1,668,282
Spec Cred	.....	a43,000
Earnings	131,500	181,163

a-Tax loss carryforward.

SEISMIC COMPUTING

Three Months Ended Dec. 31

	1972	1971
Shr Ernd	\$.11	\$.10
Revenue	5,482,000	4,598,000
Spec Cred	.....	a12,000
Earnings	133,000	120,000

a-From repurchase of subordinated debentures.

BRESNAHAN COMPUTER

Three Months Ended Dec. 31

	1972	1971
Shr Ernd	\$.07	\$.08
Revenue	1,428,000	1,349,000
Earnings	128,000	150,000

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- DESCRIBES THE ORGANIZATION AND FUNCTIONS OF DATA BASE MANAGEMENT SYSTEMS
- EVALUATES EACH SYSTEM WITH RESPECT TO TECHNICAL, APPLICATION, HARDWARE AND COST FACTORS
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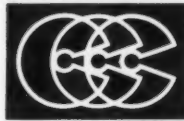
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Lease Revenues, Strong 4th Quarter Propel Memorex Back into the Black

SANTA CLARA, Calif. — Aided by a strong fourth quarter and a sizable jump in leasing revenues, Memorex has rebounded from last year's \$13.4 million loss with earnings of \$1.2 million or 30 cents a share for the year ended Dec. 31.

The fourth quarter earnings jumped to \$611,000 or 15 cents a share as revenues rose to \$39.4 million compared with \$29.6 million in the year-ago period.

Leasing revenues for the year exceeded the volume of outright sales for the first time in the company's history, according to President Laurence L. Spitters. Leasing revenues increased 71% to \$78.3 million from \$45.6 million, while sales rose slightly to \$67.1 million from \$64.6 million.

Leasing revenues constituted over 92% of the firm's \$35 million revenue increase during the year, Spitters said. Over one-third of Memorex equipment is

leased overseas, according to the firm.

Overall revenue for the year climbed to \$145.4 million from \$110.2 million.

Qualified Statement

However, Memorex auditors issued a qualified opinion regarding the 1972 statement, indicating their opinion is subject to the realization of sufficient future revenues to recover a \$22.6 million investment in the MRX/Computer Systems program.

The firm continued its deferral accounting policy, and said during 1972 there was no material writeoff of amounts deferred during 1972.

As of the end of the year, Memorex's investment in the systems program consisted of deferred R&D, facilities, inventories, lease acquisition costs and computer systems for lease, the firm said.

Since the commercialization of

the MRX/Computer Systems and the 3670 Disk Storage System, Memorex has ended deferral of development spending on these products, the firm said. As a result, the amount of intangible deferred expenses was reduced during the fourth quarter, "the first such reduction since 1967," Spitters said.

He cited the achievement of four goals as the "turning point in our long-term program to establish a significant position within the DP industry."

"First, the growth of revenues has given to our business the economy of scale necessary for profitable operations. Second, the financial turnaround and rising profits during 1972 has added to our corporate strength."

"Third, successful entry into the marketplace of the MRX/Computer Systems and 3670 Disk Storage Systems has provided credibility for the two most important development programs in our history."

"Fourth, the restructuring of the financing of our equipment-for-lease program in connection with the recent acquisition of ILC Peripherals Leasing Corp. has resulted in a major reduction of interest costs."

ADR Returns to Profitable State

PRINCETON, N.J. — Record revenues and a return to profitability characterized Applied Data Research, Inc. for the year ended Dec. 31.

With revenues rising to \$8.9 million from \$6.4 million, earnings climbed to \$72,180 or 7 cents a share from a loss of \$351,651 in the previous restated year.

Software product sales accounted for about \$3 million of total operating revenues, according to President John R. Bennett.

He also cited continued improvement in the other operating divisions and a new and profitable Timesharing Division.

The firm recently reported its first million dollar quarter for software product sales, Bennett added.

The Control System Division has reported increased acceptance of its integrated hardware/

software products, and currently has a backlog of about \$1 million on its Star product line, he said.

REI's First Quarter Earnings Rise

DALLAS — Special credits totaling \$1.2 million helped Recognition Equipment show a hefty increase in earnings in the quarter ended Jan. 31.

However, President Herman L. Philipson Jr. cautioned against annualizing quarterly results because the "large size and uncertain timing of typical transactions could yield either losses or larger-than-normal profits in some quarters."

Earnings rose to \$480,000 or 10 cents a share compared with a restated \$97,000 or 2 cents a share in the comparable previous year's period.

Earnings included a \$311,000 loss in Corporation S and special credits, \$1.1 million of which

resulted from sale of shares of Docutel Corp.

Revenues for the period decreased to \$7.5 million from \$8.7 million.

REI has proposed a merger with subsidiary Corporation S and said it showed 49.7% of the unit's loss in the restated 1972 statements, and is including 100% of the loss in 1973 statements.

Backlog at the end of the period stood at \$19.2 million, up from \$15.3 million a year earlier, while shipments in the first quarter declined to \$2.6 million from \$3.6 million a year ago.

Anderson Jacobson's 9-Month Earnings Soar

SUNNYVALE, Calif. — A record third quarter helped boost Anderson Jacobson, Inc.'s nine month earnings to more than double the figure for the corresponding year-ago period.

In the quarter ended Dec. 31, earnings totaled \$99,590 or 4 cents a share compared with \$34,239 or 1 cent a share in the 1971 period. Revenues also rose to \$1.5 million from \$1.1 million.

Nine month earnings totaled \$262,284 or 10 cents a share compared with \$110,300 or 4 cents a share in the year-ago period. Revenues rose to almost \$4 million from \$3.1 million.

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E X C H		1972-73 RANGE (1)	CLOSE MAR 22 1973	WEEK NET CHNGE	WEEK PCT CHNGE
SOFTWARE & EDP SERVICES					
O	ADVANCED COMP TECH	1- 3	1 3/4	0	0.0
A	APPLIED DATA RES.	3- 7	3 3/8	- 1/8	-3.5
O	APPLIED LOGIC	1- 4	2 1/2	0	0.0
N	AUTOMATIC DATA PROC.	65- 99	65	-3 1/4	-4.7
O	BRANDON APPLIED SYST	1- 2	5/8	0	0.0
O	COMPUTER DIMENSIONS	3- 14	2 3/4	- 1/4	-8.3
O	COMPUTER DYNAMICS	1- 4	7/8	0	0.0
N	COMPUTER NETWORK	2- 7	1 3/4	- 1/4	-12.5
N	COMPUTER SCIENCES	3- 10	3 1/4	- 7/8	-21.2
O	COMPUTER TASK GROUP	1- 2	1 5/8	+ 1/4	+18.1
O	COMPUTER TECHNOLOGY	2- 8	3	0	0.0
O	COMPUTER USAGE	5- 14	5 1/8	- 5/8	-10.8
N	COMPUTING & SOFTWARE	8- 28	7 7/8	- 7/8	-10.0
O	COMRESS	1- 3	3/4	0	0.0
O	COMSHARE	5- 10	5 7/8	- 5/8	-9.6
O	DATATAB	3- 9	2 3/4	- 1/8	-4.3
O	EDP RESOURCES	1- 8	1 5/8	0	0.0
A	ELECT COMP PROG	1- 5	1 3/8	0	0.0
N	ELECTRONIC DATA SYS.	43- 65	46 3/4	-2 3/4	-5.5
O	INFORMATICS	3- 11	3 7/8	- 1/8	-3.1
O	I.O.A. DATA CORP	1- 3	3/4	0	0.0
O	KEANE ASSOCIATES	4- 7	3 1/2	- 1/4	-6.6
O	KEYDATA CORP	7- 13	7 1/2	-1 1/2	-16.6
O	LOGICON	4- 9	5 3/8	- 1/4	-4.4
A	MANAGEMENT DATA	3- 10	2 1/2	- 1/2	-16.6
O	NATIONAL CSS INC	8- 41	34 1/4	-2 1/2	-6.8
O	NATIONAL INFO SRVCS	1- 5	1 5/8	- 1/8	-7.1
P	ON LINE SYSTEMS INC	5- 19	15 3/8	- 1/2	-3.1
N	PLANNING RESEARCH	4- 17	3 5/8	- 1/2	-12.1
O	PROGRAMMING METHODS	20- 25	21 1/2	-1 3/8	-6.0
O	PROGRAMMING & SYS	1- 2	7/8	0	0.0
O	RAPIDATA INC	5- 27	16 1/4	-3 1/4	-16.6
O	SCIENTIFIC COMPUTERS	1- 4	1 1/4	- 1/4	-16.6
O	SIMPLICITY COMPUTER	1- 5	2	- 1/8	-5.8
O	TBS COMPUTER CENTERS	3- 6	3	0	0.0
O	TCC INC	1- 3	1/2	+ 1/4	+100.0
O	TYMSHARE INC	7- 12	7 1/2	- 7/8	-10.4
O	UNITED DATA CENTER	5- 8	5 1/4	- 1/2	-8.6
N	UNIVERSITY COMPUTING	7- 26	10 1/8	0	0.0
A	URS SYSTEMS	6- 10	5 5/8	- 1/2	-8.1
PERIPHERALS & SUBSYSTEMS					
N	ADDRESSOGRAPH-MULT	20- 49	19 1/2	-3 1/4	-14.2
O	ADVANCED MEMORY SYS	12- 23	14 3/4	-3 3/4	-20.2
N	AMPEX CORP	5- 15	5 1/2	- 1/8	-2.2
O	ANDERSON JACOBSON	4- 8	5 3/8	- 7/8	-14.0
O	BEEHIVE MEDICAL ELEC	1- 8	7 3/4	- 1/4	-3.1
A	BULK, BERANEK & NEW	5- 21	9 7/8	- 5/8	-5.9
N	BUNKER-RAMO	7- 14	6 1/2	- 1/4	-3.7
A	CALCOMP	9- 25	11 1/8	-1	-8.2
O	CAMBRIDGE MEMORIES	9- 15	10 1/2	- 7/8	-7.6
O	CENTRONICS DATA COMP	6- 28	19 1/2	-2 1/2	-11.3
O	CODEX CORP	6- 25	12 3/4	-1 1/4	-8.9
O	COGNITRONICS	1- 5	1 5/8	0	0.0
O	COMPUTER COMMUN.	1- 7	2 5/8	0	0.0
A	COMPUTER EQUIPMENT	2- 4	2 3/8	+ 1/8	+5.5
O	COMPUTER MACHINERY	7- 13	9 5/8	-1 3/8	-12.5
O	COMPUTER TRANSCIVER	2- 9	2 3/4	0	0.0
A	COMPUTEST	3- 9	4 1/2	0	0.0
N	CONRAC CORP	24- 39	23 1/2	-1 5/8	-6.4
A	DATA PRODUCTS CORP	3- 7	3 1/4	- 1/4	-7.1
O	DATA RECOGNITION	1- 5	2 1/2	0	0.0
O	DATA TECHNOLOGY	2- 5	3 3/8	- 1/4	-6.8
O	DI/AN CONTROLS	3- 8	2 3/4	- 1/2	-15.3
N	ELECTRONIC M & M	3- 8	3 1/2	0	0.0
O	FABRI-TEK	2- 5	3 3/8	- 1/8	-3.5
O	GENERAL COMPUTER SYS	6- 16	6 1/2	-1 1/2	-18.7
N	GENERAL ELECTRIC	59- 74	63 5/8	-4	-5.9
N	HAZELTINE CORP	7- 13	7 3/8	- 3/8	-4.8
O	INFOREX INC	14- 36	14	-1 1/4	-8.1
O	INFORMATION DISPLAYS	1- 5	3/4	+ 1/8	+20.0
O	INFORMATION INTL INC	8- 25	11 3/4	+ 1/2	+4.4
A	LUNDY ELECTRONICS	6- 14	6 1/4	- 3/8	-5.6
O	MANAGEMENT ASSIST	1- 1	1/2	0	0.0
A	MILGO ELECTRONICS	15- 44	20 3/4	+ 3/4	+3.7
N	MOHAWK DATA SCI	7- 27	7 3/8	- 1/4	-3.2
O	ODEC COMPUTER SYST.	3- 12	4 1/2	0	0.0
O	OPTICAL SCANNING	2- 16	4 1/2	- 1/4	-5.2
O	PERTEC CORP	5- 17	6 1/4	- 1/4	-3.8
O	PHOTON	3- 15	3 3/4	- 1/4	-6.2
A	POTTER INSTRUMENT	6- 21	5 7/8	- 1/8	-2.0
O	PRECISION INST.	2- 13	3 1/2	- 1/2	-12.5
O	RECOGNITION EQUIP	5- 15	4 7/8	- 7/8	-15.2
N	SANDERS ASSOCIATES	10- 21	10	-1	-9.0
O	SCAN DATA	2- 13	2 1/4	- 1/2	-18.1
O	STORAGE TECHNOLOGY	17- 39	20 1/4	-4 1/4	-17.3
O	SYCOR INC	7- 11	9 1/4	+ 1/4	+2.7
O	TALLY CORP.	7- 15	7 3/8	-2 3/4	-27.1
N	TEKTRONIX INC	34- 64	36 5/8	-5 1/2	-13.0
N	TELEX	4- 15	4 1/2	0	0.0
O	WILTEK INC	10- 26	11	-2	-15.3
SUPPLIES & ACCESSORIES					
O	BALTIMORE BUS FORMS	5- 9	6 3/4	- 1/4	-3.5
A	BARRY WRIGHT	9- 14	8 1/2	-1 1/4	-12.8
A	DATA DOCUMENTS	17- 26	19 1/8	+ 3/4	+4.0
O	DUPLEX PRODUCTS INC	8- 16	8 1/4	-1	-10.8
N	ENNIS BUS. FORMS	6- 10	6	- 3/8	-5.8
O	GRAHAM MAGNETICS	15- 27	17	- 3/4	-4.2
O	GRAPHIC CONTROLS	10- 15	10	- 3/4	-6.9
N	3M COMPANY	76- 88	82	-4	-4.6
O	MOORE CORP LTD	42- 59	58	- 3/4	-1.2
N	NASHUA CORP	48- 62	50	-2 5/8	-4.9
O	REYNOLDS & REYNOLD	37- 77	46 3/4	-2 7/8	-5.7
O	STANDARD REGISTER	14- 20	17 1/4	+ 3/4	+4.5

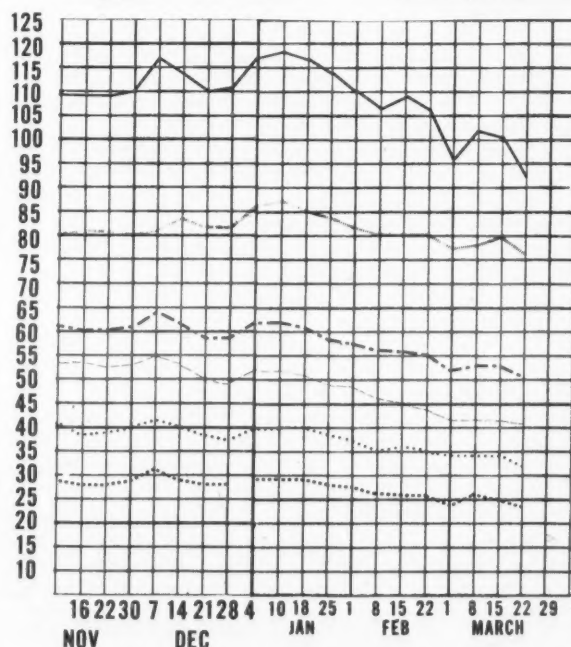
E X C H		1972-73 RANGE (1)	CLOSE MAR 22 1973	WEEK NET CHNGE	WEEK PCT CHNGE
COMPUTER SYSTEMS					
O	TAB PRODUCTS CO	14- 23	15	-3	-16.6
N	UARCO	19- 28	19 3/4	- 3/8	-1.8
A	WABASH MAGNETICS	6- 11	6	- 1/4	-4.0
N	WALLACE BUS FORMS	21- 26	23 1/2	- 1/8	-0.5
COMPUTER SYSTEMS					
N	BURROUGHS CORP	147-244	224 1/4	-14	-5.8
N	COLLINS RADIO	14- 27	24	- 1/4	-1.0
N	CONTROL DATA CORP	42- 78	42 3/4	-3 3/8	-7.3
O	DATA GENERAL CORP	36-131	35 1/2	-8 3/4	-19.7
O	DIGITAL COMP CONTROL	3- 25	3 3/4	- 3/4	-16.6
N	DIGITAL EQUIPMENT	72-105	79	-5 1/2	-6.5
N	ELECTRONIC ASSOC.	6- 13	5 3/4	- 7/8	-13.2
A	ELECTRONIC ENGINEER.	6- 14	9 1/4	-1 1/2	-13.9
N	FOXBORO	23- 41	25 1/8	-4 5/8	-15.5
O	GENERAL AUTOMATION	13- 55	33	-5	-13.1
O	GRI COMPUTER CORP	2- 5	1 5/8	- 1/4	-13.3
N	HEWLETT-PACKARD CO	46- 94	80 5/8	-10 3/8	-11.4
N	HONEYWELL INC	106-170	112 1/2	-3 1/2	-3.0
N	IBM	333-451	425 1/2	-18 1/2	-4.1
O	INTERDATA INC	8- 16	7 3/4	-1 5/8	-17.3
N	MEMOREX	10- 38	10 1/2	+ 5/8	+6.3
O	MICRODATA CORP	5- 10	7 1/8	-1 1/8	-13.6
N	NCR	27- 38	29 1/4	-1 3/4	-5.6
N	RAYTHEON CO	27- 47	27 1/8	-2 1/8	-7.2
N	SPERRY RAND	30- 50	42 1/4	+ 5/8	+1.5
A	SYSTEMS ENG. LABS	4- 16	4 3/4	- 1/4	-5.0
N	VARIAN ASSOCIATES	14- 22	13 7/8	- 7/8	-5.9
N	WANG LABS.	18- 61	19	-2	-9.5
N	XEROX CORP	121-172	153	-15 1/8	-8.9
LEASING COMPANIES					
A	BOOTHE COMPUTER	3- 18	3	- 1/8	-4.0
O	BRESNAHAN COMP.	1- 3	1 1/4	0	0.0
O	COMDISCO INC	3- 18	10 7/8	-1 3/4	-13.8
O	COMMERCE GROUP CORP	4- 11	4 3/8	- 1/4	-5.4
O	COMPUTER EXCHANGE	1- 3	5/8	0	0.0
O	COMPUTER INVSTRS GRP	4- 14	4 1/2	- 1/8	-2.7
A	COMP. INSTALLATIONS	2- 5	2	0	0.0
N	DPF INC	5- 13	6 3/4	- 3/4	-10.0
M	DATRONIC RENTAL	2- 4	2 1/8	0	0.0
A	DCL INC	2- 10	1 7/8	- 1/4	-11.7
A	DEARBORN-STORM	16- 26	17 1/8	- 3/4	-4.1
A	DPA, INC.	5- 8	6 1/4	- 1/8	-1.9
A	GRANITE MGT	5- 11	5	- 1/8	-2.4
A	GREYHOUND COMPUTER	5- 11	4 5/8	- 3/8	-7.5
N	ITEL	7- 12	7 3/8	- 3/4	-9.2
N	LEASCO CORP	12- 24	11 5/8	- 7/8	-7.0
O	LEASPCORP	6- 15	7 1/8	+1 3/8	+23.9
O	LECTRO MGT INC	1- 4	1	- 1/8	-11.1
O	ROCKWOOD COMPUTER	2- 7	2 1/4	- 1/8	-5.2
O	SYSTEMS CAPITAL	3- 20	7 7/8	-1 5/8	-17.1
N	U.S. LEASING	19- 35	24 3/8	-1 3/8	-5.3

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH

O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

Computer Stocks Trading Index

— Computer Systems — Software & EDP Services
..... Peripherals & Subsystems Leasing Companies
— Supplies & Accessories — CW Composite Index



Earnings Reports

ROCKWOOD COMPUTER

Nine Months Ended Dec. 31

	1972	1971
Shr Ernd	\$.12	\$.54
Revenue	34,016,040	36,568,115
aSpec Cred	200,926	395,295
Earnings	589,369	1,861,352

a-In 1972, consists of gain on repurchase of company's publicly held debentures, plus utilization of capital loss carryforward, less loss applicable to sale of assets unrelated to computer leasing and real estate operations; in 1971, gain on repurchase of company's publicly held debentures plus utilization of capital loss carryforward.

PLANNING RESEARCH

Three Months Ended Dec. 31

	1972	a1971
Shr Ernd	.....	\$ .16
Revenue	\$22,784,316	20,417,555
Spec Chg	b6,572,000	.....
Earnings	(6,346,844)	1,007,909
6 Mo Shr	.....	.31
Revenue	45,683,263	38,039,879
Spec Chg	b6,572,000	.....
Earnings	(5,764,943)	1,951,066

a-Restated. b-Related to equipment and deferred software costs of International Reservations Corp. subsidiary.

DATA PACKAGING

Year Ended Dec. 2

	1972	1971
Shr Ernd	\$.12	.....
Revenue	13,746,720	\$10,917,778
aSpec Chg	78,275	82,000
Earnings	194,175	(20,553)

a-From writedown of investment to estimated realizable amount.

CALIFORNIA COMPUTER PRODUCTS

Three Months Ended Dec. 31

	1972	a1971
Shr Ernd	\$.24	.....
Revenue	20,479,000	\$11,985,000
Earnings	705,000	(277,000)
6 Mo Rev	33,471,000	25,468,000
Spec Chg	.....	b4,724,000
Loss	1,578,000	5,229,000

a-Restated to conform to current accounting practices. b-Cumulative effect on prior years to (to June 30, 1971) of changing to a different method of accounting for engineering and development costs and lease acquisition and installation costs.

ITEL

Year Ended Dec. 31

	1972	1971
Shr Ernd	\$.24	.....
Revenue	100,133,000	101,180,000
Disc Op	.....	(7,273,000)
Spec Item	b1,208,000	d7,708,000
Earnings	1,746,000	(5,901,000)
3 Mo Shr	.59	.....
aRevenue	37,451,000	20,092,000
Disc Op	.....	(3,951,000)
Spec Item	b1,208,000	d7,708,000
Earnings	4,314,000	(10,712,000)

a-From continuing operations. b-Credit; tax benefit from discontinued operations. d-Debit; related to discontinued office product manufacturing and marketing.

COMPUTER AUTOMATION

Three Months Ended Dec. 31

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48 MONTH FIXED TERM LEASE

IBM SYSTEM	370/135	370/145	370/155	370/158	370/165	370/168
IBM MONTHLY CHARGE	\$14,933	\$27,969	\$71,754*	\$61,458	\$124,355*	\$104,230
CIG MONTHLY CHARGE	\$11,742	\$22,162	\$39,671	\$49,503	\$74,693	\$84,934
CIG 48 MONTH SAVINGS	\$153,168	\$278,736	\$1,540,147	\$574,800	\$2,479,776	\$926,208

CIG prices include maintenance and plug-compatible equipment where applicable. *Includes 10% overtime charge (IBM Fixed Term Lease not available on 155 and 165).

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